The PHOTOFACT® Servicer

SET 543 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ AUG. 1961

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This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

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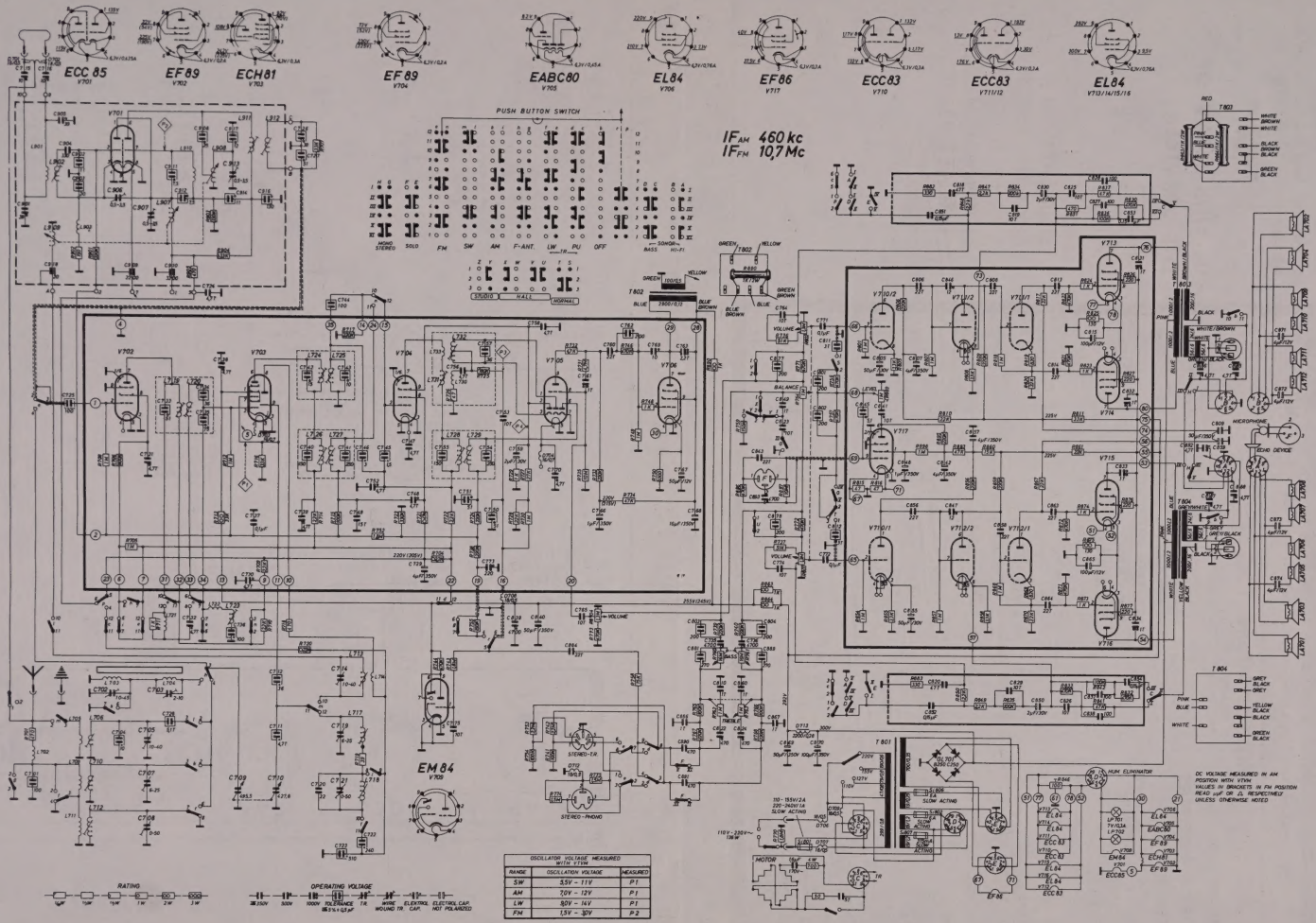
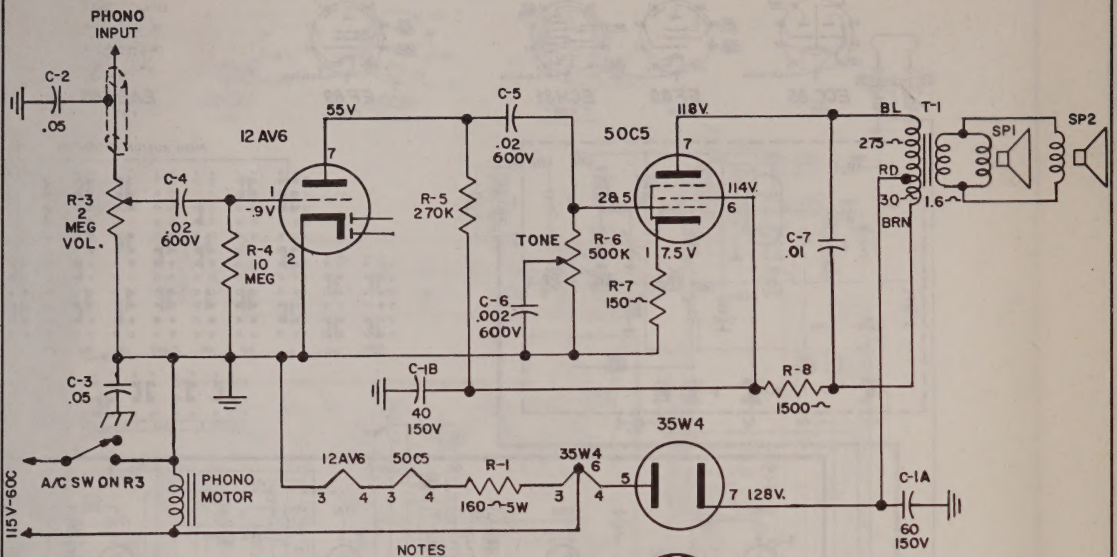
Blaupunkt Model
New Yorker 40403

Silvertone Model 6242
(CH. 567.33007)



BLAUPUNKT MODEL NEW YORKER 40403

. Schematic Diagram Courtesy of Blaupunkt: Importer N. Pickens Import Company



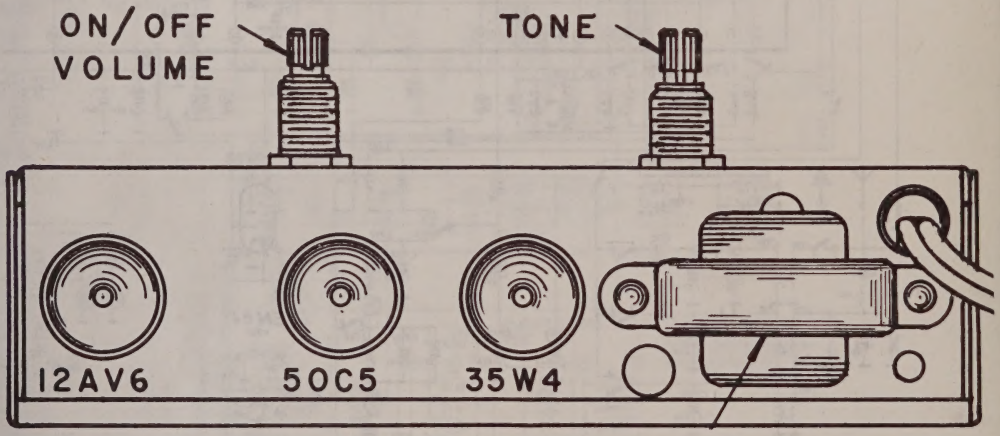
NOTES

1. ALL VALUES OF CAPACITORS GIVEN IN MFD. UNLESS OTHERWISE NOTED
2. ALL CAPACITORS ARE 200 V. UNLESS OTHERWISE NOTED
3. ALL RESISTORS ARE 1/2 WATT UNLESS OTHERWISE NOTED
4. VOLTAGES MEASURED FROM POINTS INDICATED TO ELECTRICAL GROUND WITH 20,000 OHM/VOLT METER

BOTTOM VIEW OF TUBE SOCKET SHOWING TERMINAL NUMBERING

CHASSIS GROUND

B-



SILVERTONE MODEL 6242 (CH. 567.33007)

Schematic Diagram Courtesy of Sears, Roebuck & Company

PHOTOFACT® Folder with CIRCUITRACE®

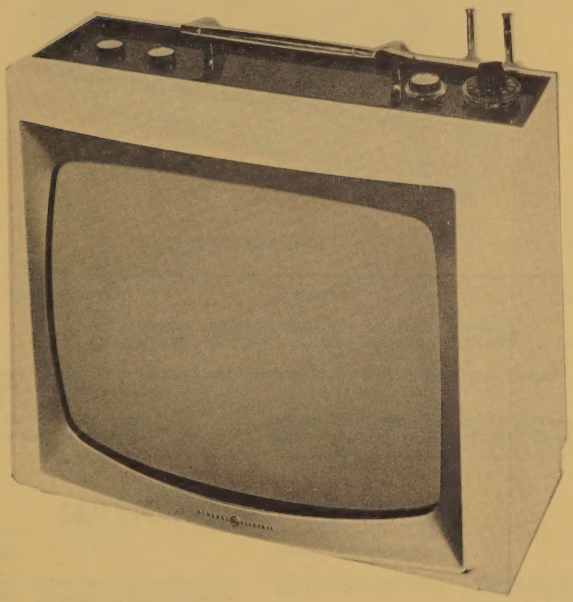
**GENERAL ELECTRIC
CHASSIS LW**

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

GENERAL ELECTRIC
CHASSIS LW



GENERAL ELECTRIC
CHASSIS LW

MODEL M204WVY

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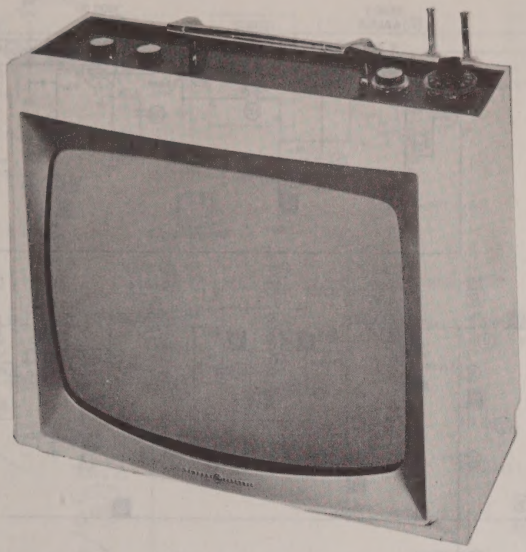
SET 543 FOLDER 1

PHOTOFACT® Folder with CIRCUITRACE®

GENERAL ELECTRIC CHASSIS LW

GENERAL ELECTRIC CHASSIS LW



MODEL M204WVY

TRADE NAME	GENERAL ELECTRIC	MODELS	CHASSIS	TUNER
		M202WGN, M203WGN, M204WBN, M204WEB, M204WGL, M204WVY, M205WBN, M205WEB, M205WGL, M205WVY	LW	WT86X102, 103, or 106
MANUFACTURER	General Electric Co., Appliance and Television Receiver Div., Louisville, Kentucky			
TYPE SET	Television Receiver			
TUBES	VHF - Sixteen			
POWER SUPPLY	110-128 Volts AC, 60 Cycle	RATING 160 Watts, 1.5 Amp. @ 117 Volts AC		
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)			

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

It is necessary to remove picture tube for safety glass cleaning and removal. (See "Disassembly Instructions" on back page).

FUSE

A 3 Amp. (Line) Fuse and a .3 Amp. S/B Fuse (Horizontal Output, Damper) are used for receiver protection. (See "Tube Placement Chart" for location).

TUNER OSCILLATOR ADJUSTMENT

Tuner WT86X103: Osc. Slugs accessible (one at a time for each channel) thru hole in front of tuner.
Tuner WT86X102: Osc. Slugs accessible (one at a time for each channel) thru hole in front plate of tuner.
Tuner WT86X106: Osc. Trimmer located at top (front) of tuner.

FOCUS

The focus may be varied by connecting the lead from pin 4 of the picture tube (thru 1000Ω resistor) to various voltage points. (See TV Schematic).

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horizontal Frequency Slug (B1). (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by a Width Switch. (For location, see "Tube Placement Chart").

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

PINCUSHION CORRECTION

Correction magnets, one at top and one at bottom of yoke flange, may be moved to front or rear of flange, depending on amount of correction needed. (Maximum correction is attained when magnets are in front). Observe magnet polarity (by point code).

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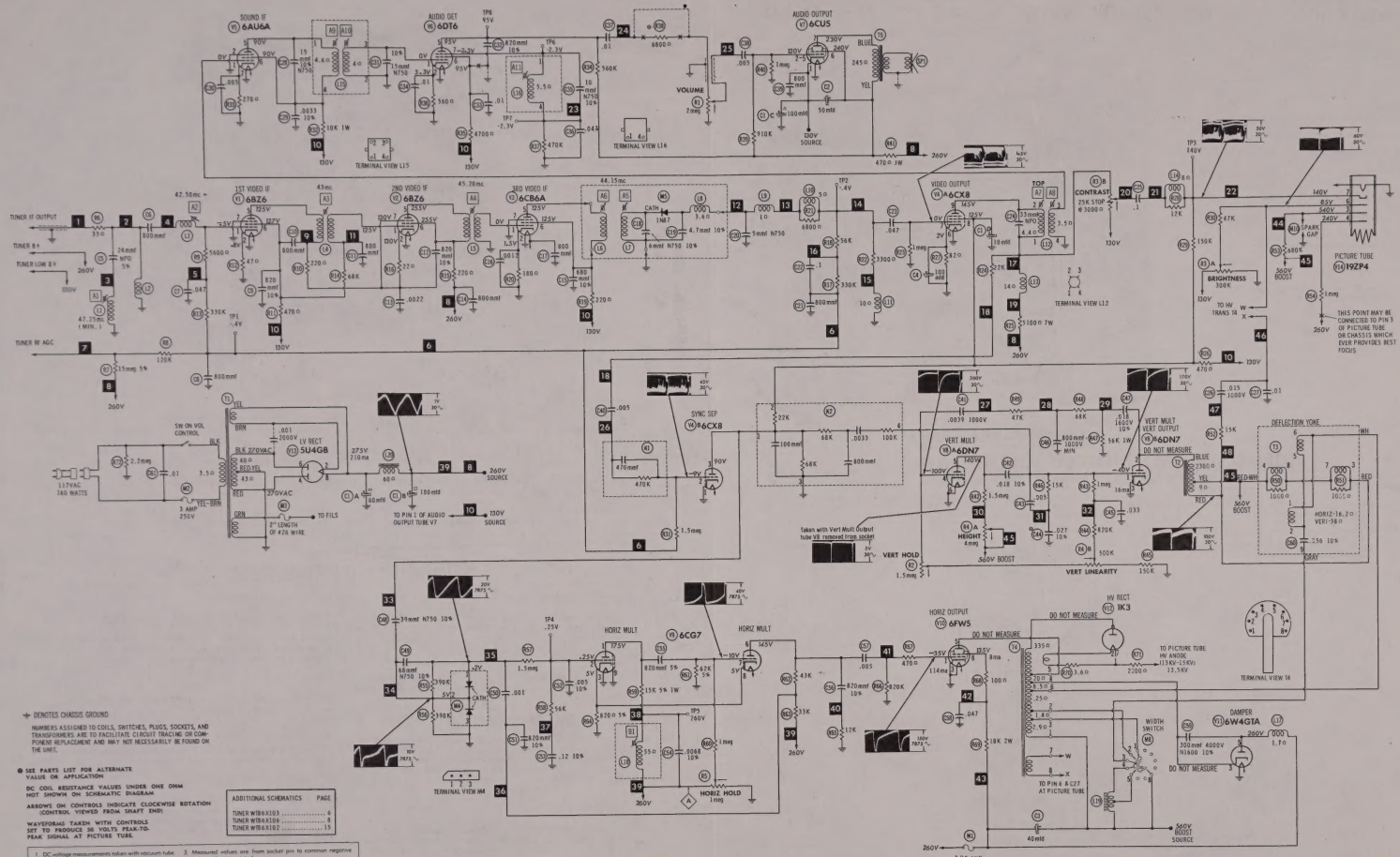
KA934

SET 543 FOLDER 1


SOUND IF
6AU6A
AUDIO DET
6DT6
AUDIO OUTPUT
6CU5
VOLUME
TERMINAL VIEW L15
TERMINAL VIEW L16
1ST VIDEO IF
6BZ6
2ND VIDEO IF
6BZ6
3RD VIDEO IF
6CB6A
VIDEO OUTPUT
6CX8
CONTRAST
25K STOP @ 3000Ω
BRIGHTNESS
300K
TO HV TRANS 1R
PICTURE TUBE
19ZP4
TERMINAL VIEW L12
THIS POINT MAY BE CONNECTED TO PIN 3 OF PICTURE TUBE OR CHASSIS WHICH EVER PROVIDES BEST FOCUS
TUNER IF OUTPUT
TUNER B+
TUNER LOW B+
TUNER IF AGC
117VAC 160 WATTS
SW ON VOL CONTROL
LV RECT
5U4GB
270VAC
TO FILS
2" LENGTH OF #26 WIRE
3 AMP 250V
TO PIN 1 OF AUDIO OUTPUT TUBE V7
SYNC SEP
6CX8
VERT MULT
6DN7
VERT MULT VERT OUTPUT
6DN7
DO NOT MEASURE
VERT HOLD
VERT LINEARITY
HEIGHT
560V BOOST
DEFLECTION YOKE
HORIZ-16.2 VERT-38Ω
Taken with Vert Mult Output tube V8 removed from socket
HORIZ MULT
6CG7
HORIZ OUTPUT
6FW5
HV RECT
1K3
TO PICTURE TUBE HV ANODE (11.5KV-15KV) 13.5KV
TERMINAL VIEW T4
WIDTH SWITCH
DAMPER
6W4GTA
TO PIN 6 & C27 AT PICTURE TUBE
HORIZ HOLD
3/10 AMP 250V SLO BLO
260V BOOST SOURCE
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
ADDITIONAL SCHEMATICS PAGE
TUNER WT8-X103 4
TUNER WT8-X106 5
TUNER WT8-X102 15
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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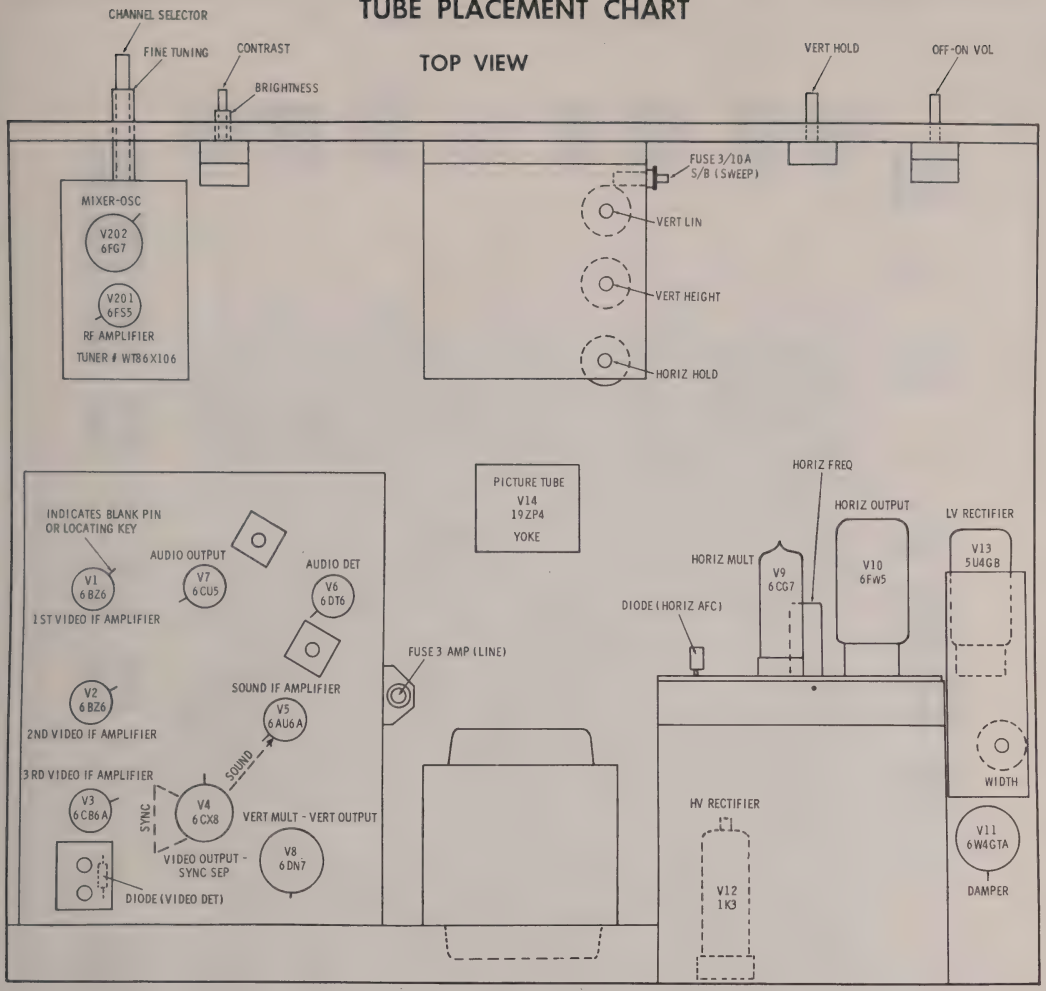
GENERAL ELECTRIC CHASSIS LW

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

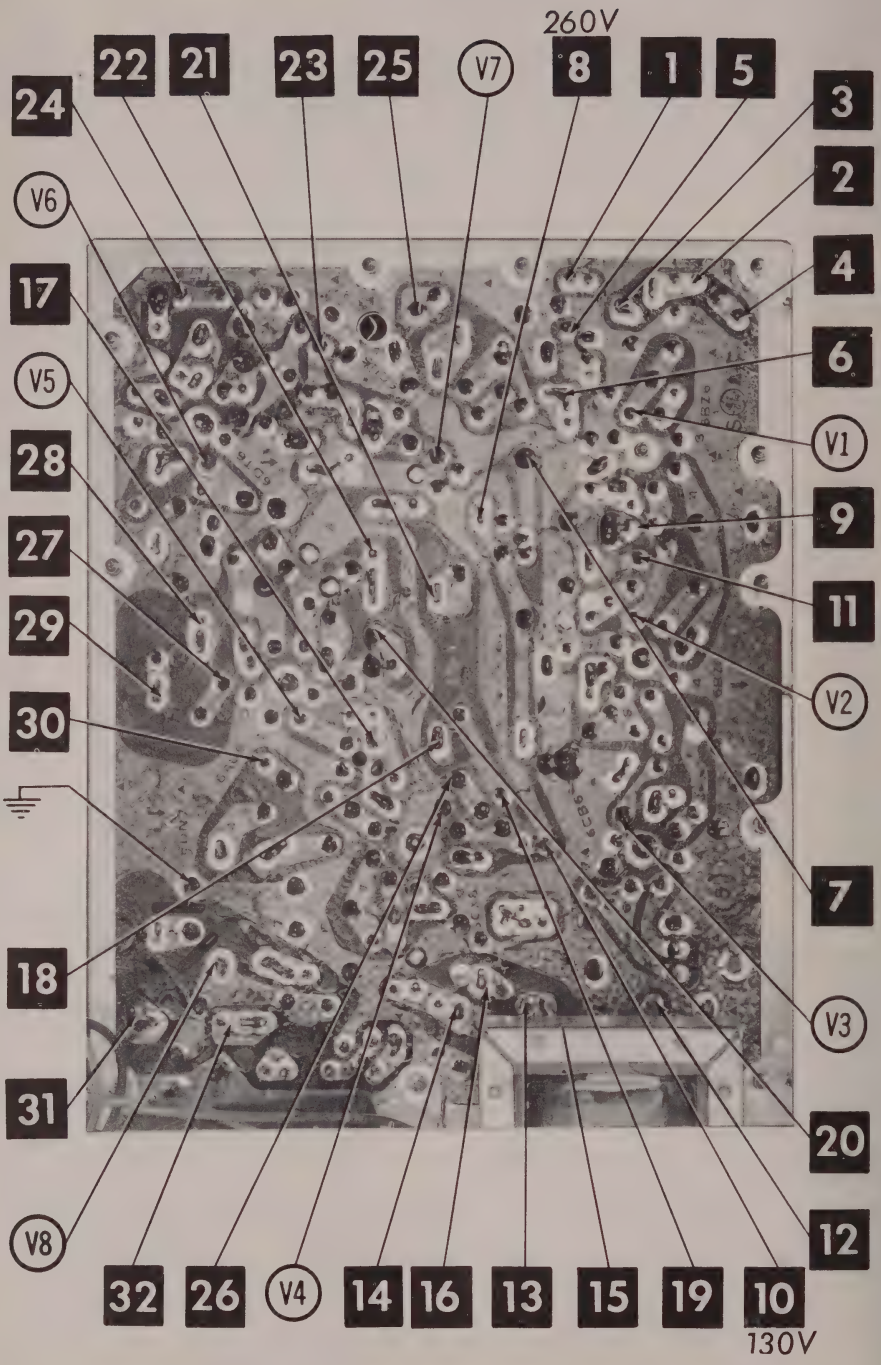
The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse (Line), V13, Fuse Wire (Fil.)

SWEEP FAILURE
No raster, has sound V9, V10, Fuse (Sweep), V11, V12, V14
No vertical deflection V8
Poor vert. linearity or foldover V8
Poor horiz. linearity or foldover V9, V10, V11
Narrow picture V9, V10, V11, V13
Vert. off freq. V8
Horiz. off freq. Diodes (Horiz. AFC), V9

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4, V7
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V14
Has pic, no sound V5, V6, V7

SYNC FAILURE
No vert. sync V4
No horiz. sync V4
No vert. or horiz. sync V4



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MAIN PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

TV ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Turn Volume control fully counterclockwise and Contrast control fully clockwise.
Short the antenna terminals together but not to chassis.
Connect the negative lead of a 3.5 volt bias supply to point TP-1. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side to ungrounded tube shield over Mixer-Osc. Low side to chassis.	Not used	47.25MC	Any non-interfering channel	Use VTVM DC probe thru 22K to TP-2. Common to chassis. (Across Video Det. Load.)	A1	Adjust for MINIMUM deflection.
2.	"	"	45.75MC	"	"	Mixer Plate Coil	Adjust for maximum deflection.
3.	"	"	42.50MC	"	"	A2	"
4.	"	"	43.0MC	"	"	A3	"
5.	"	"	45.20MC	"	"	A4	"
6.	"	"	44.15MC	"	"	A5, A6	Adjust for maximum deflection. Do not retouch A5 or A6.
7.	"	44MC (10MC Swp.)	41.25MC 42.5MC 44.15MC 45.0MC 45.75MC 47.25MC	"	Vert. Amp. thru 22K to TP-2. Low side to chassis.		Check for response similar to Fig. 1 with markers as indicated. If necessary, retouch proper slug(s) to obtain desired response. The high frequency side is controlled by Mixer Plate Coil and A4. Low frequency side is controlled by A3. Control top of curve by A2.

4.5MC TRAP ALIGNMENT

Connect the negative lead of a 7.5 volt bias supply to point TP-1. Positive to chassis.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	High side thru .001mfd to TP-2. Low side to chassis.	4.5MC (400~ 30% AM)	Any non-interfering channel	Vert. Amp. thru demodulator probe to TP-3. Low side to chassis.	A7	Adjust for MINIMUM 400~ indication on scope.

SOUND IF ALIGNMENT

Tune in a weak TV signal and set the Volume control fully counterclockwise. Connect the DC probe of the VTVM to TP-8. Common to chassis. Adjust A8, A9 and A10 for maximum deflection. Two positions of each core will give indications of maximum. The correct setting is with the core nearest its respective end of the coil form.
Switch to a strong TV signal and adjust All beginning with the slug at the end of the coil form away from the printed board and then tuning carefully inward for the second peak indicating maximum undistorted output.

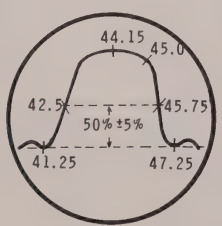
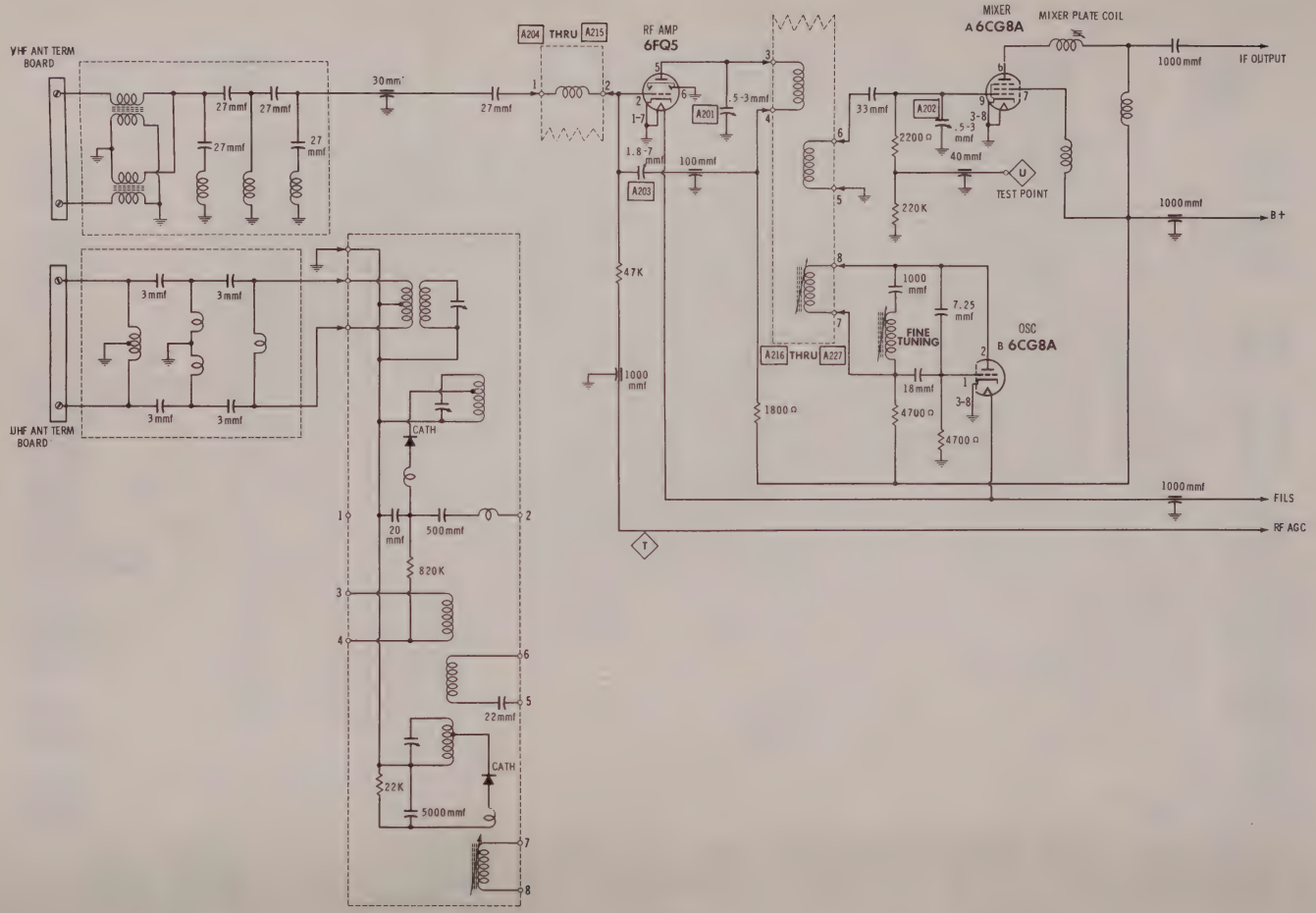


FIG.1

ALIGNMENT IDENTIFICATION PHOTO - PAGE 18
ALIGNMENT TEST POINT LOCATION PHOTO - PAGE 16



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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TUNER WT86X103 (VHF WITH UHF PROVISIONS)

TUNER ALIGNMENT INSTRUCTIONS

WT86X103

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage Lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201, A202, A203 .... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a variable bias supply to point Ⓣ. Positive to chassis. Set bias for 2.5 volts.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point Ⓤ. Low side to chassis.	A201, A202, A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
2.	"	213MC	211.25MC 215.75MC	13	"	A204	Adjust for maximum amplitude of response similar to Fig. 201. Adjust by expanding or compressing coil turns.
		207MC	205.25MC 209.75MC	12		A205	
		201MC	199.25MC 203.75MC	11		A206	
		195MC	193.25MC 197.75MC	10		A207	
		189MC	187.25MC 191.75MC	9		A208	
		183MC	181.25MC 185.75MC	8		A209	
		177MC	175.25MC 179.75MC	7		A210	
		85MC	83.25MC 87.75MC	6		A211	
		79MC	77.25MC 81.75MC	5		A212	
		69MC	67.25MC 71.75MC	4		A213	
		63MC	61.25MC 65.75MC	3		A214	
		57MC	55.25MC 59.75MC	2		A215	

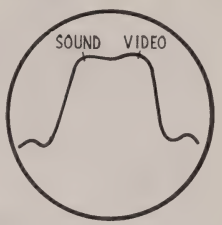


FIG. 201

VHF OSCILLATOR ALIGNMENT

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. Load.	A216	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
		207MC	205.25MC 209.75MC	12		A217	
		201MC	199.25MC 203.75MC	11		A218	
		195MC	193.25MC 197.75MC	10		A219	
		189MC	187.25MC 191.75MC	9		A220	
		183MC	181.25MC 185.75MC	8		A221	
		177MC	175.25MC 179.75MC	7		A222	
		85MC	83.25MC 87.75MC	6		A223	
		79MC	77.25MC 81.75MC	5		A224	
		69MC	67.25MC 71.75MC	4		A225	
		63MC	61.25MC 65.75MC	3		A226	
		57MC	55.25MC 59.75MC	2		A227	

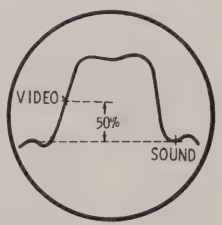
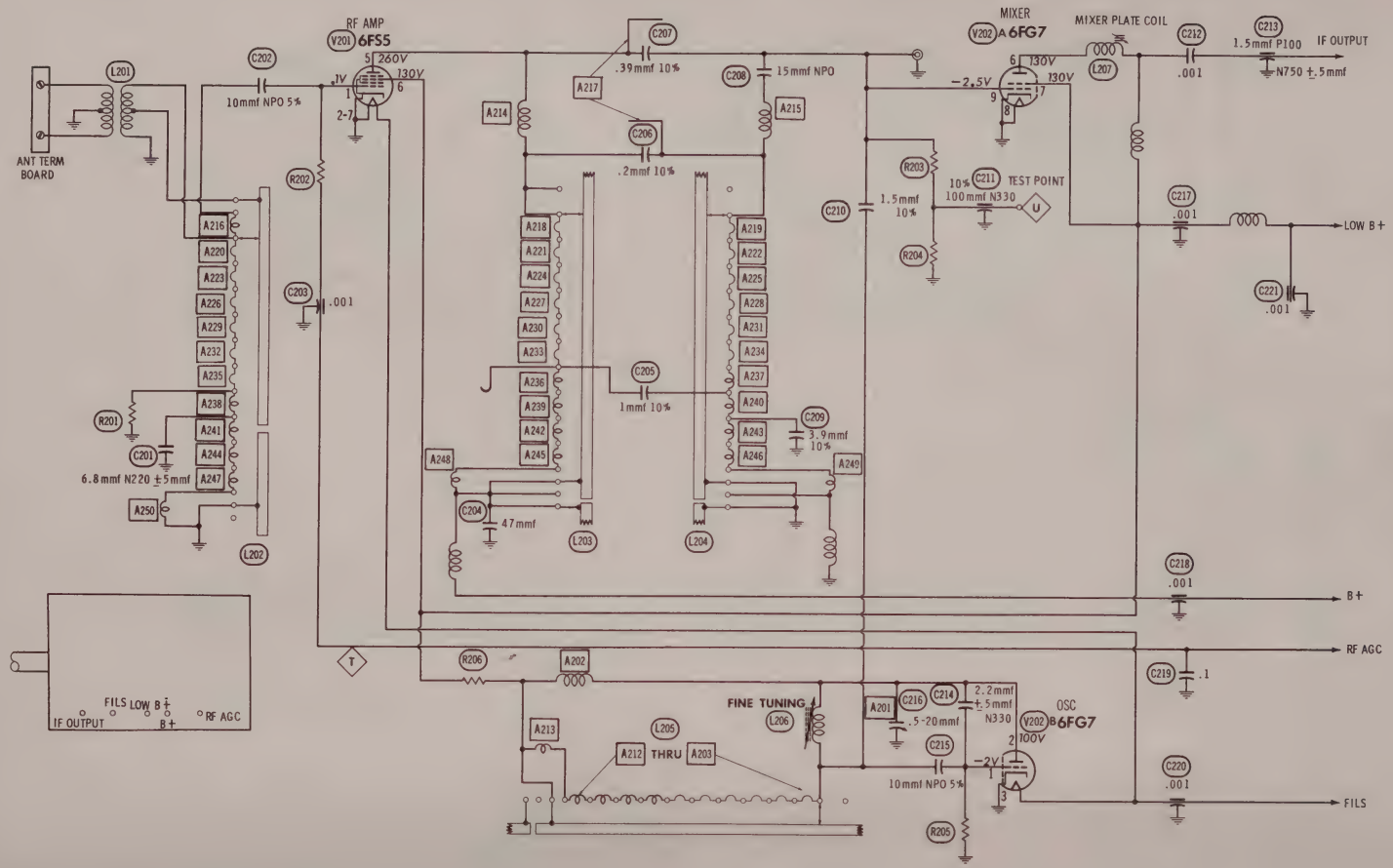


FIG. 202



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TUNER WT86X106

TUNER ALIGNMENT INSTRUCTIONS

WT86X106

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 ..... GENERAL CEMENT #8721, 8722
WALSCO #2519

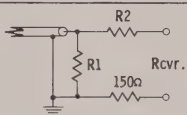
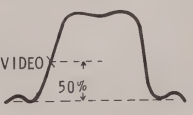
VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Set the Fine Tuning to the center of its range.
Connect the negative lead of a 3 volt bias supply to point Ⓣ. Positive to chassis.
Use 10MC sweep unless otherwise noted.
Preset A201 at center of its range. Replace tuner cover each time to observe response on scope.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Across VHF Antenna terminals thru matching network (Fig. 201).	213MC	211.25MC	13	Vert. Amp. thru 10K across Video Detector load.	A202,	Adjust to place Video marker at 50% on response curve as shown in Fig. 202.
		207MC	205.25MC	12		A203,	
		201MC	199.25MC	11		A204,	
		195MC	193.25MC	10		A205,	
		189MC	187.25MC	9		A206,	
		183MC	181.25MC	8		A207,	
		177MC	175.25MC	7		A208,	
		85MC	83.25MC	6		A209,	
		79MC	77.25MC	5		A210,	
		69MC	67.25MC	4		A211,	
		63MC	61.25MC	3		A212,	
		57MC	55.25MC	2		A213	

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Connect the negative lead of a 1.5 volt bias supply to point Ⓣ. Positive to chassis.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Disconnect IF link from IF Strip and terminate with a 33 ohm resistor at open end only. Tuner cover must be in place when observing response on scope.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Across VHF antenna terminals thru matching network (Fig. 201).	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K to point Ⓤ. Low side to chassis.	A214, A215, A216, A217A & B	Adjust in numerical order for maximum gain and symmetry of response similar to Fig. 203. A214 controls marker position. A215 controls tilt, A216 controls gain. A217A and B controls bandwidth.
3.	"	207MC	205.25MC 209.75MC	12	"	A218, A219, A220	Adjust in numerical order for response similar to Fig. 203. Adjust first coil for proper marker position, second coil for proper tilt and third coil for maximum gain.
4.	"	201MC	199.25MC 203.75MC	11	"	A221, A222, A223	 Zo = Impedance of Cable
5.	"	195MC	193.25MC 197.75MC	10	"	A224, A225, A226	
6.	"	189MC	187.25MC 191.75MC	9	"	A227, A228, A229	
7.	"	183MC	181.25MC 185.75MC	8	"	A230, A231, A232	
8.	"	177MC	175.25MC 179.75MC	7	"	A233, A234, A235	 FIG. 202
9.	"	85MC	83.25MC 87.75MC	6	"	A236, A237, A238	
10.	"	79MC	77.25MC 81.75MC	5	"	A239, A240, A241	
11.	"	69MC	67.25MC 71.75MC	4	"	A242, A243, A244	FIG. 203
12.	"	63MC	61.25MC 65.75MC	3	"	A245, A246, A247	
13.	"	57MC	55.25MC 59.75MC	2	"	A248, A249, A250	

Zo	R1	R2
50Ω	56Ω	120Ω
75Ω	82Ω	110Ω

FIG. 201

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No	GENERAL ELECTRIC — USE	GENERAL ELECTRIC — TYPE	ITEM No	RAYTHEON — USE	RAYTHEON — TYPE	ITEM No	SYLVANIA — USE	SYLVANIA — TYPE
V1	1st Video IF Amplifier	6BZ6	V8	Vert. Mult.-				
V2	2nd Video IF Amplifier	6BZ6		Vert. Output	6DN7			
V3	3rd Video IF Amplifier	6CB6A	V9	Horiz. Mult.	6CG7			
V4	Video Output - Sync Sep.	6CX8	V10	Horiz. Output	6FW5			
V5	Sound IF Amplifier	6AU6A	V11	Damper	6W4GTA			
V6	Audio Detector	6DT6	V12	HV Rectifier	1K3			
V7	Audio Output	6CU5	V13	LV Rectifier	5U4GB			

PICTURE TUBE

ITEM No	REPLACEMENT DATA: G. E. PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V14	19ZP4	19ZP4 ①			19ZP4 ②	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	VOLT	REPLACEMENT DATA: G. E. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	460	350	WT3LX186	AFH4-99-85	C0338	FP330..28	TMT-3495	TVL-3539..2	
B	4600	350			REFILL	TC52	TD-100-200	TVA-1718	
C	4100	150							
D	10	200							
C2	50	150	WT3LX184	AFH1-18	A0300	FP315	TMB-1230	TVL-1415	
C3	40	400	WT3LX170	PRS2750	BR4045	TC78	TD-40-450	TVA-1712	
C4	100	10	WT3LX185	PRS1150	BBR100-15	TC2501	TD-100-15	TVA-1130	

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: G. E. PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	24 NPO 5%			TCZ-24	C10Q24C		CNO-425	10TCC-Q25	
C6	800		BPD-0008	DD-801	L10T8	CCD-801	B-382	10TS-T80	
C7	.047 200V		P388N-047	DD-503	CU2S347	4DP-3-473	GEM-4147	2TM-S47	
C8	800		BPD-0008	DD-801	L10T8	CCD-801	B-382	10TS-T80	
C9	630 10%		DI-630	DD-621	5RS7S3	CCD-621	GP382	10TS-T62	
C10	800		BPD-0008	DD-801	L10T8	CCD-801	B-382	10TS-T80	
C11	800		BPD-0008	DD-801	L10T8	CCD-801	B-382	10TS-T80	
C12	630 10%		DI-630	DD-621	5RS7S3	CCD-621	GP382	10TS-T62	
C13	.0022		BPD-0022	DD-222	BYA10D22	CCD-223	B-323	5HK-D22	
C14	800		BPD-0008	DD-801	L10T8	CCD-801	B-382	10TS-T80	
C15	680 10%		DI-680	DD-681	5RS7S6	CCD-681	GP356	10TS-T56	
C16	.0012		DI-1200	DD-123	L10D12	CCD-123	B-312	10TS-D12	
C17	800		BPD-0008	DD-801	L10T8	CCD-801	B-382	10TS-T80	
C18	6 N750 10%	#WT1EX434		CY0V6C					
C19	4.7 10%		NPO-SI 4.7	TCZ-4R7	C0V47C	CCTO-4R7	CNO-547	10TCC-V47	
C20	5 N750			DTN-5	C10V5U	CCTN-050	CN7-550	10TCU-V50	
C21	800		BPD-0008	DD-801	L10T8	CCD-801	B-382	10TS-T80	
C22	.1 200V		P388N-1	DF-104	CU2S1P1	2DP-3-104	GEM-401	2TM-P10	
C23	.047 200V		P388N-047	DD-503	CU2S347	4DP-3-473	GEM-4147	2TM-S47	
C24	33		NPO-DI 33	DTZ-33	C10Q33C	CCNO-433	CN7-450	10TCC-Q33	
C25	.1 400V		P488N-1	DF-104	CU43P1	4DP-3-104	GEM-401	4TM-P10	
C26	.015 1000V		P1088N-015	DD6-153	CU10S15	10DP-4-153	GEM-10115	10TM-S15	
C27	.01 600V		P688N-01	DD-103	CU6S1	6DP-3-103	GEM-611	6TM-S10	
C28	15 N750 10%		N750-DI 15	DTN-15	C10Q15U	CCTN-150	CN7-415	10TCU-Q25	
C29	.0033 10%		DI-3300		PME3D3	CCD-332	JL-333	10TS-D33	
C30	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-350	5HK-D5	
C31	15 N750 10%		N750-DI 15	DTN-15	C10Q15U	CCTN-150	CN7-415	10TCU-Q25	
C32	820 10%		DI-820	DD-821	5RS7S2	CCD-821	GP382	10TS-T82	
C33	.01		BPD-01	DD-103	BYA10R	CCD-103	B-110	5HK-R10	
C34	.01		BPD-01	DD-103	BYA10R	CCD-103	B-110	5HK-R10	
C35	10 N750 10%		N750-DI 10	DTN-10	C10Q10U	CCTN-100	CN7-410	10TCU-Q10	
C36	.047 200V		P388N-047	DD-503	CU2S347	4DP-3-473	GEM-4147	2TM-S47	
C37	.01		BPD-01	DD-103	BYA10R	CCD-103	B-110	5HK-R10	
C38	.005		BPD-005	DD-502	BYA10D5	CCD-503	B-350	5HK-D50	
C39	800		BPD-0008	DD-801	L10T8	CCD-801	B-382	10TS-T80	
C40	.005		BPD-005	DD-502	BYA10D5	CCD-503	B-350	5HK-D50	
C41	.0039 1000V		P1084CM-0039	DD-392	CU10D4	10DP-3-402	GEM-1024	10TM-D40	
C42	.018 600V 10%		P684CM-018		PME5S	6DP-3-203	GEM-1812	6TM-S20	
C43	.005		BPD-005	DD-502	BYA10D5	CCD-503	B-350	5HK-D50	
C44	.027 ± 500V 10%								
C45	.033 600V		P488N-033	DD-303	CU3S333	4DP-3-333	GEM-4133	6TM-S33	
C46	800 1000V Min.	#WT22X81	HVD-15-830	DD30-801		3CCD-801	2HV-382	30GA-T82	
C47	.018 1600V 10%				DP5S1S82	16DP-4-303	GEM-1823	MD-S20	
C48	39 N750 10%			TCN-39	C10Q39U	CCTN-390	CN7-439	10TCU-Q39	
C49	68 N750 10%		N750-DI 68	DTN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68	
C50	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10	
C51	820 10%		DI-820	DD-821	5RS7S2	CCD-821	GP382	10TS-T82	
C52	.005 10%		DI-5000		PME5D5	CCD-503	JL-350	10TS-D50	
C53	.12 200V 10%	#WT25X34							
C54	.0068 400V 10%		V84C4D68-10%		PME3D68	6DP-1-683	GEM-16368	6TM-D68	
C55	820 5%		1469-00082		PME3T82	CM-19D-S82		MS-382	
C56	820 10%		DI-820	DD-821	5RS7S2	CCD-821	GP382	10TS-T82	
C57	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-350	5HK-D50	
C58	.047 400V		P488N-047	DD-503	CU4S47	4DP-3-473	GEM-4147	4TM-S47	
C59	300 4000V N600 10%	#WT1EX425							
C60	.056 600V 10%		P684CM-067		DP5S5S6	5DP-3-563		6PS-S56	
C61	.01 500V		P688N-01	D6-103	CU3S6R	6DP-2-103	GEM-611	6TM-S10	

† Temperature Compensated

G. E. Part Number

CONTROLS

ITEM No	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: G. E. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS—IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	WT49X331	AB-T6	A47-1meg-Z	B13-139	U55	Volume
B	Shaft			AK-23	RS-3/16	SK9	DS-37	
C	Switch			KR-1	SWF-12	T6-1	US-26	Power Off-On
R2A	1 Swing	½	WT49X330	AB-T42	A47-1meg-S	B11-138	U155	Vert. Hold
B	Shaft			AK-23	RS-3/16	SK9	DS-37	
R3A	300Ω		WT49X328			② WJ-4368		Brightness
B	25K ①					① WJ-4367		Contrast
R4A	4meg		WT49X274	TT-86	B47-5meg-S	HLC4	PTA56L	Height
B	500K			TT-59	B47-500K-S	B11-133	PTA55L	Vert. Linearity
C	Shaft			Not Req.	Not Req.	Not Req.	TM4	

CONTROLS (cont)

ITEM No	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: G. E. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS—IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R5A	1meg	½	WT49X329	TT-89	B47-1meg-S	B11-137	TA16L	Horiz. Hold
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	

† "CONCENTRIKIT" Equivalent: K-16 Kit with Base Elements and Shafts: B11-131, P17-024 (Panel) B14-120 *, R1-108 (Rear)

* Use 2700Ω Resistor in series with right hand terminal, viewed with shaft end terminals down.

① Has 3000Ω Stop.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R6	33Ω			
R7	15meg 5%			
R8	130K			
R9	5600Ω			
R10	220Ω			
R11	470Ω			
R12	47Ω			
R13	330K			
R14	68K			
R15	220Ω			
R16	22Ω			
R17	330K			
R18	56K			
R19	220Ω			
R20	180Ω			
R21	6800Ω			
R22	3300Ω			
R23	1meg			
R24	22K			
R25	5100Ω 7W	PW7-5100	TW-5Q-5100	
R26	470Ω			
R27	82Ω			
R28	12K			
R29	150K			
R30	47K			
R31	1.5meg			
R32	10K 1W			
R33	270Ω			
R34	560K			
R35	4700Ω			
R36	560Ω			
R37	470K			
R38	6800Ω			Note 1
R39	910K			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R40	1meg			
R41	470Ω 3W	PW3-470	3G-470	
R42	1.5meg			
R43	1meg			
R44	820K			
R45	150K			
R46	15K			
R47	56K 1W			
R48	68K			
R49	47K			
R50	1000Ω			
R51	1000Ω			
R52	15K			
R53	680K			
R54	1meg			
R55	18K			
R56	390K			
R57	1.5meg			
R58	56K			
R59	15K 5% 1W			
R60	1meg			
R61	62K 5%			
R62	43K			
R63	33K			
R64	820Ω 5%			
R65	12K			
R66	620K			
R67	470Ω			
R68	100Ω			
R69	18K 2W			
R70	3.6Ω			
R71	2200Ω			
R72	2.2meg			

Note 1. May not be used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: G. E. PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	47.25MC Trap	WT36X445					
L2	RF Choke	WT36X377					
L3	1st Video IF	WT36X446					
L4	2nd Video IF	WT61X113					
L5	3rd Video IF	WT61X113					
L6	4th Video IF (Pri.)	WT36X444					
L7	4th Video IF (Sec.)	WT36X444					
L8	RF Choke (10uh)	WT36X430	BC-566	4612	RTC-8522	T860	
L9	RF Choke (8.2uh)	WT36X449	BC-565	4611	RTC-8521	T960	
L10	Peaking (120uh)	WT36X410	TV-195	6153	RTC-8595	T343	
L11	Peaking (390uh)	WT36X384	TV-201	6134	RTC-8578	T350	
L12A	4.5MC Trap	WT36X405					
B	1st Sound IF						
L13	Peaking (680uh)	WT36X261	TV-206	6148	RTC-8583	T356	
L14	Peaking (240uh)	WT36X435	TV-185	6181	RTC-8598	T346	
L15	2nd Sound IF	WT61X115					
L16	Quadrature	WT36X448					
L17	RF Choke (10uh)	WT36X105	BC-566	4612	RTC-8522	T860	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: G. E. PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.	NOTES
L18	Horiz. Stabilizer	WT36X447							
L19	Width Choke (.4MH)	WT36X409							

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE 1000 ~/s	REPLACEMENT DATA: G. E. PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L20	.210A	60Ω	1 Hy.	WT63X58	C-2996 ①	C-2343	28C44 ①	C-34X	① Drill new mounting hole(ø).

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: G. E. PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V ② 1.5A	540VCT ② .210A DC	5V ② 3A	WT62X57					
	SEC. 3	SEC. 4	SEC. 5						
	6.3V ② 3.3A								

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: G. E. PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Output	WT64X84	A-3037	VO-101 ①	26875	A-138X	
T3	Yoke (Horiz. 12MH)	WT78X31 †	(MDF-106 ②④	DY-40A ②③	Y-81 ②	Y-70-1 ③	
(1/4")	(Vert. 38.5MH)					D-204	
T4	Horiz. Output	WT77X47					

† Includes Yoke Clamp and Cushion (Part #WT9X27), Centering Device, and Magnets.

① Drill new mounting hole(s).

② Use original vertical yoke damping resistor if necessary.

③ Connect Yoke Terminal #2 to Horizontal Output Transformer Terminal #6. Connect .056mfd Capacitor from Yoke Terminal #7 to Width Switch Terminal #3.

④ Connect Yoke Terminal #6 to Horizontal Output Transformer Terminal #6. Disconnect .056mfd Capacitor from Yoke Terminal #10 and connect to Terminal #3 of Width Switch.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: G. E. PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	2900Ω	3-4Ω	WT64X85	A-3025	A-3322	24853	S-16X	

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: G. E. PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	WT95X6	4AIR	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	G. E. PART No.	REPLACEMENT DATA
K1	Sync Sep. Grid	470mmf, 470K	WT24X3	Centralab RC-465
K2	Vert. Integrator	100mmf, 800mmf, .0033mfd, 22K, 68K, 68K, 100K	WT33X41	Syragus PRC-3 Centralab PC-350

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: G. E. PART No. FUSE	G. E. PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	N	3/10A 250V	WT10X25	WT8X63	333.300 (N 3/10A 250V 3/B)	346008	N 3/10	HN 0-3/10A
M2	C	8/B 8A 250V	WT10X34	WT8X61	332003 (C 3A 250V)	346007	C 3	HC 2.5-3.5A
M3	2"	length of #26 wire						

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: G. E. PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M4		WT16X7 *	8GC1 *			* Dual Selenium, Common Cathode Type
M5	1N87	WT16X1 ♦		1N87 ♦	1N87 ♦	♦ Video Detector

MISCELLANEOUS

ITEM No.	PART NAME	G. E. PART No.	NOTES
M6	Tuner	WT96X106	VHF, STANDARD COIL REPLACEMENT #GG-4230-A
	Tuner	WT96X102 *	VHF (* WT96X106 used as replacement)
	Tuner	WT96X103	VHF with UHF Provisions
M7	Antenna (Dipole)	WT93X34	JFD REPLACEMENT #TA41G, Models M204WVY, M205WVY
	Antenna (Dipole)	WT93X35	JFD REPLACEMENT #TA41G, Models M204WBN, M205WBN
	Antenna (Dipole)	WT93X36	JFD REPLACEMENT #TA41G, Models M204WEB, M205WEB
	Antenna (Dipole)	WT93X37	JFD REPLACEMENT #TA41G, Models M204WGL, M205WGL
	Antenna (Monopole	WT93X33	JFD REPLACEMENT #TA41, Models M202WGN, M203WGN
M8	Switch	WT39X5	Width
M9	Magnet	WT60X1	Anti Pincushion
M10	Spark Gap	WT10X27	
	Printed Board	WT93X48	Video Detector Assembly

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

DESCRIPTION	PART NO.	DESCRIPTION	PART NO.	NOTES
Safety Glass	WT9X239 ①	Cabinet Back-Gray	WT93X229 ①	① All Models except M202WGN, M203WGN
Knob-Channel Selector	WT43X331	Cabinet Back-Green	WT93X230 ②	
Knob-Fine Tuning	WT43X312	Cabinet Back-Gold	WT93X231 ③	② M202WGN, M203WGN
Knob-Brightness	WT43X332	Cabinet Front-White, Green	WT9X230 ②	③ M204WEB, M205WEB
Knob-Vol., Vert. Hold, Contrast	WT43X333 ①	Cabinet Front-White, Gold, Gray	WT9X231 ①	④ M204WBN, M205WBN
Knob-Vol., Vert. Hold, Contrast	WT43X334 ③	Cabinet Front-White, Gold, Brown	WT9X232 ③	⑤ M204WVY, M205WVY
Handle-Chrome	WT76X120 ①	Cabinet Front-White, Gold, Black	WT9X53 ③	⑥ M204WGL, M205WGL
Handle-White	WT78X119 ②	Cabinet Front-White, Gold	WT9X54 ③	⑦ M204WBN, M205WBN
Cabinet Back-Black	WT9X127 ①	Escutcheon-Ebony & Silver	WT92X81 ④	
Cabinet Back-Brown	WT95X128 ④	Escutcheon-Ebony	WT89X182 ②	

WIRING DATA

High Voltage Lead	Use BELDEN No. 8889
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8736 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 8 Conductor

GENERAL ELECTRIC CHASSIS 1JW

FOLDER 1

TUNER PARTS LIST AND DESCRIPTIONS

WT86X106

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
	• GENERAL ELECTRIC •		RAYTHEON •		SYLVANIA •
V201	RF Amp.	6FS5	V202	Mixer - Osc.	6FG7

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	6.8 N220 ±.5mmf	#WT18X341				*		10TCR-V68
C202	10 NPO 5%		NPO-10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C203	.001		EF-001	MFT-1000		CCF-102	CT280A	
C204	47		DI-47	DD-47	L10Q47	CCD-470	GP447	10TS-Q47
C205	1 10%		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C206	.2mmf 10%	#WT21X32						
C207	.39mmf 10%	#WT21X27						
C208	15 NPO		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C209	3.9 10%	#WT21X39						10TCC-V39
C210	1.5 10%		NPO-SI 1.5	TCZ-1R5	C10V15C		CNO-515	10TCC-V15
C211	100 N3300 10%	#WT23X27				*		
C212	.001		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C213	1.5 P100-N750 ±.5mmf	#WT23X14				*		
C214	2.2 N330 ±.25mmf	#WT18X414						
C215	10 NPO 5%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C216	.5-20							
C217	.001		EF-001	MFT-1000		CCF-102	CT280A	
C218	.001		EF-001	MFT-1000		CCF-102	CT280A	
C219	.1 200V		P288N-1		CUB2P1	2DP-3-104	GEM-201	2TM-P10
C220	.001		EF-001	MFT-1000		CCF-102	CT280A	
C221	.001		EF-001	MFT-1000		CCF-102	CT280A	

G. E. Part Number
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

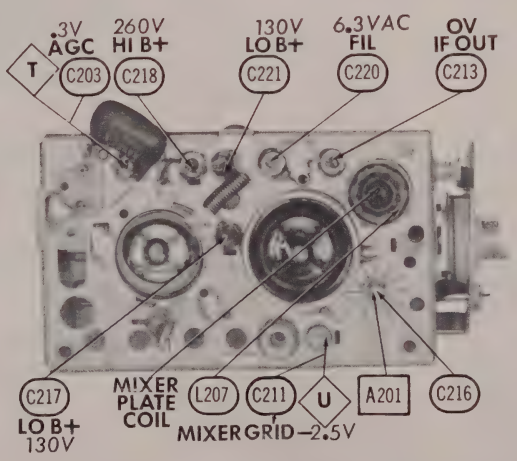
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	12K 5%				R204	220K			(200K) *
R202	47K 5%				R205	15K 5%			
R203	4700Ω 5%				R206	10K 5%			

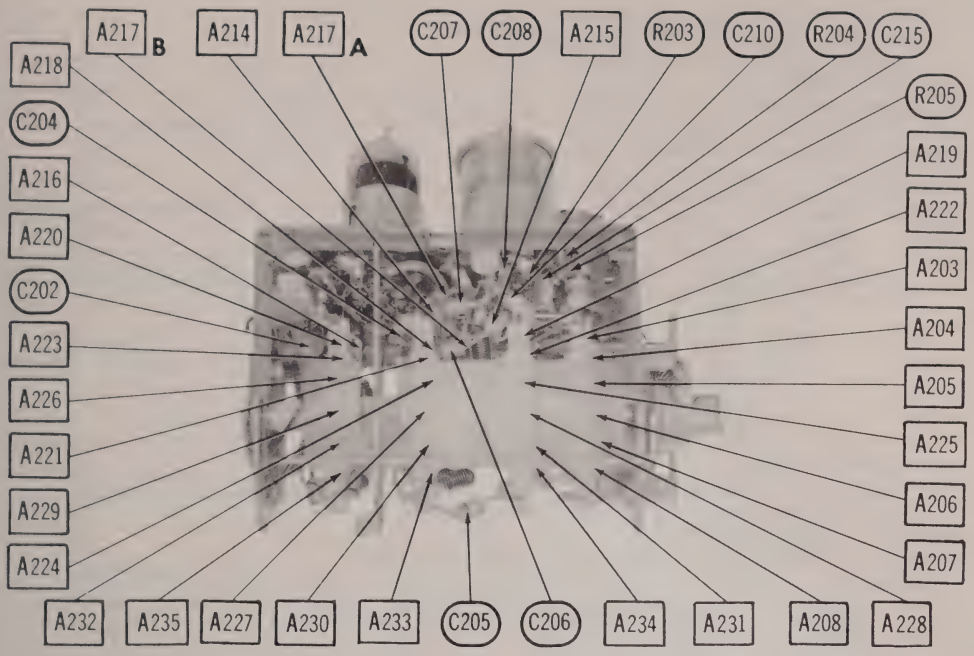
* Alternate Value

COILS (RF-IF)

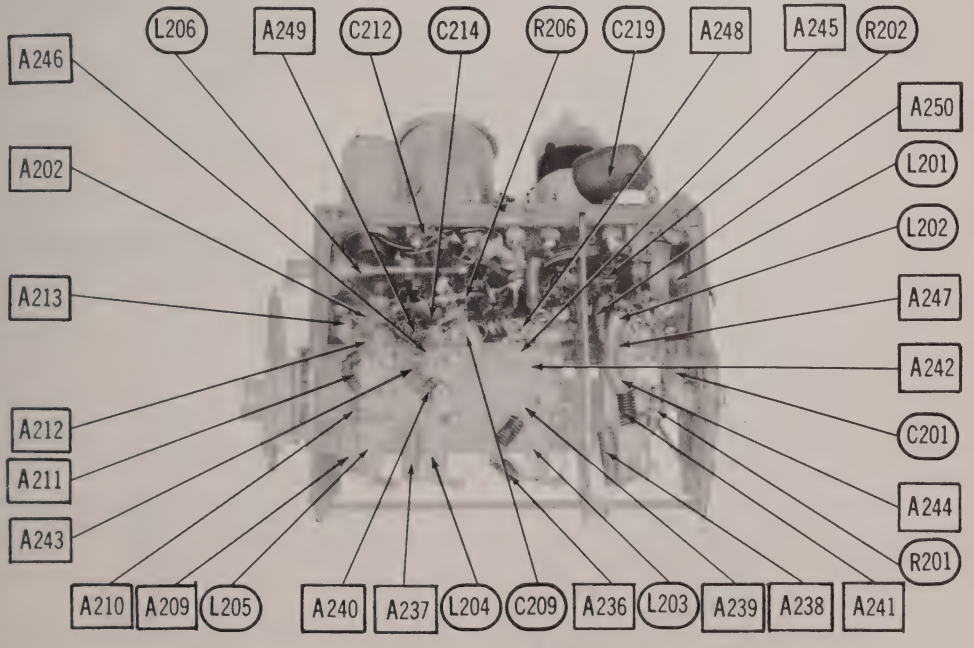
ITEM No.	USE	G. E. PART No.	NOTES	ITEM No.	USE	G. E. PART No.	NOTES
L201	Ant. Trans.	WT37X36		L204	Mixer Grid	WT52X175	Channel 2-13 Wafer Ass'y
L202	Ant.	WT52X173	Channel 2-13 Wafer Ass'y	L205	Osc.	WT52X176	Channel 2-13 Wafer Ass'y
L203	RF	WT52X174	Channel 2-13 Wafer Ass'y	L206	Fine Tuning	WT36X429	
				L207	Mixer Plate	WT36X443	



TUNER WT86X106 —TOP VIEW



TUNER WT86X106 - LEFT SIDE



TUNER WT86X106 - RIGHT SIDE

TUNER ALIGNMENT INSTRUCTIONS

WT86X102

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VHF OSCILLATOR ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point ⓣ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Tuner cover must be in place when observing response curve on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Fig. 201	Across VHF antenna terminals thru matching network (Fig. 201).	213MC	211.25MC	13	Vert. Amp. thru 10K across Video Det. load.	A201	Adjust to place Video marker at 50% on response curve as in Fig. 202.
			207MC	205.25MC	12		A202	
			201MC	199.25MC	11		A203	
			195MC	193.25MC	10		A204	
			189MC	187.25MC	9		A205	
			183MC	181.25MC	8		A206	
			177MC	175.25MC	7		A207	
			85MC	83.25MC	6		A208	
			79MC	77.25MC	5		A209	
			69MC	67.25MC	4		A210	
			63MC	61.25MC	3		A211	
			57MC	55.25MC	2		A212	

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Connect the negative lead of a 3 volt bias supply to point ⓣ. Positive to chassis.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Disconnect IF link from Video IF strip and terminate open end with a 68Ω resistor. Tuner cover must be in place when observing response curve on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Fig. 201	Across VHF antenna terminals thru matching network.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K to point ⓤ. Low side to chassis.	A213, A214, A215, A216, A217	Adjust A213, A214 and A215 for maximum gain and symmetry of response similar to Fig. 203. Adjust A216 (gimmick) for proper bandwidth. If dip is excessive, adjust A217.
3.	"	"	177MC	175.25MC 179.75MC	7	"	A218, A219, A220	Adjust A218 and A219 for maximum gain and symmetry of response similar to Fig. 203. Adjust A220 (gimmick) for proper bandwidth.
4.	"	"	207MC	205.25MC 209.75MC	12	"		Check for response similar to Fig. 203. If necessary, make compromise adjustment of A218 and A219 best response on all channels.
			201MC	199.25MC 203.75MC	11			
			195MC	193.25MC 197.75MC	10			
			189MC	187.25MC 191.75MC	9			
			183MC	181.25MC 185.75MC	8			
5.	"	"	85MC	83.25MC 87.75MC	6	"	A221, A222, A223	Adjust for maximum gain and symmetry of response similar to Fig. 203 with markers as shown.
6.	"	"	79MC	77.25MC 81.75MC	5	"	A224, A225, A226	"
7.	"	"	69MC	67.25MC 71.75MC	4	"	A227, A228, A229	"
8.	"	"	63MC	61.25MC 65.75MC	3	"	A230, A231, A232	"
9.	"	"	57MC	55.25MC 59.75MC	2	"	A233, A234, A235	"

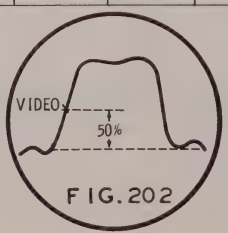


FIG. 202

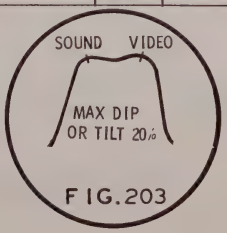
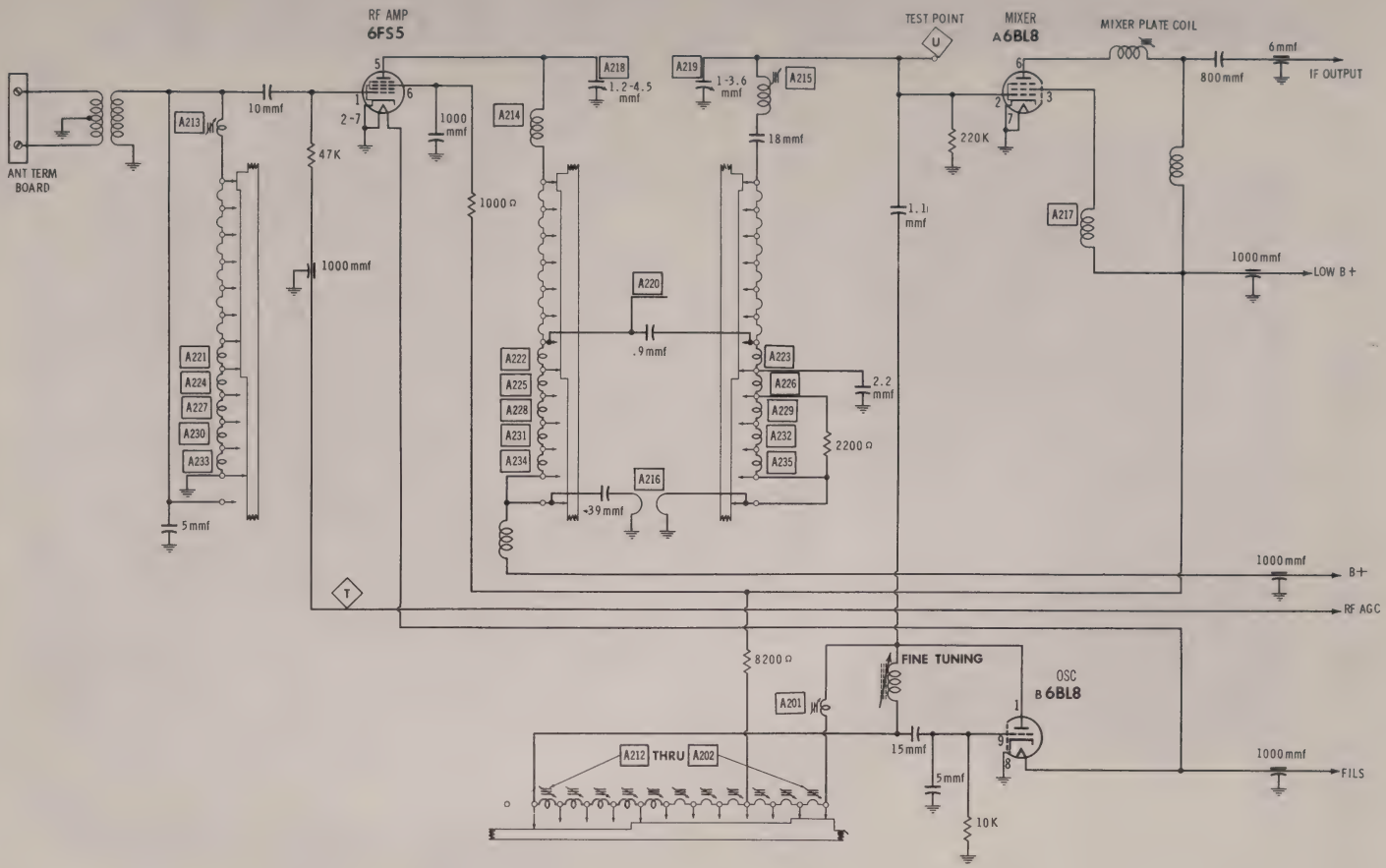


FIG. 203



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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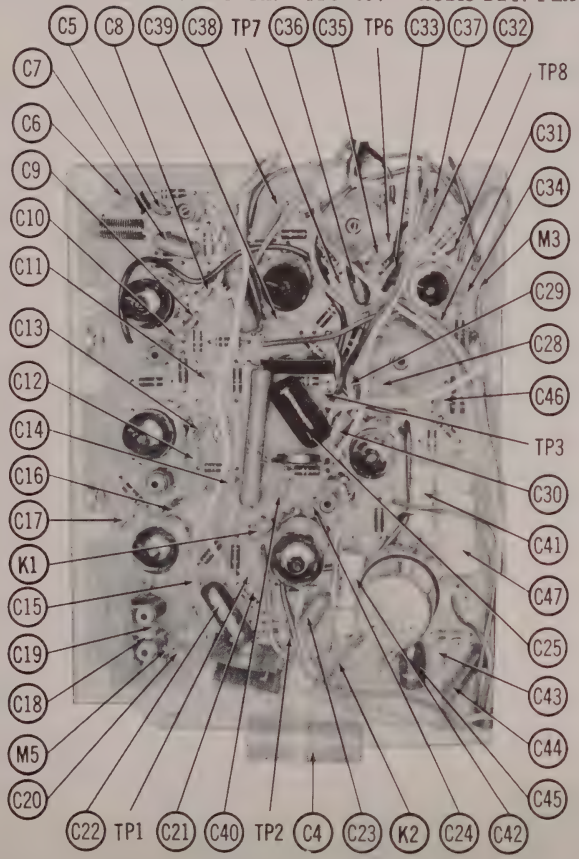
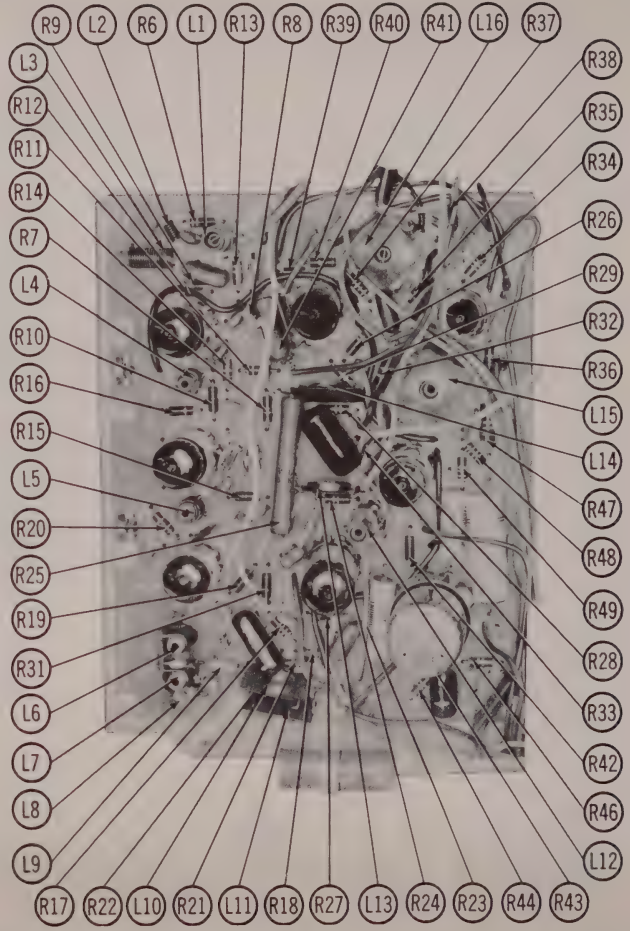
TUNER WT86X102

CHASSIS LW

GENERAL ELECTRIC

TP1 -.4V IF AGC
TP2 -.4V VIDEO DET. OUTPUT
TP3 140V PICTURE TUBE CATH.
TP6 -2.3V AUDIO DET.
TP7 AUDIO DET.
TP8 95V AUDIO DET. PLATE

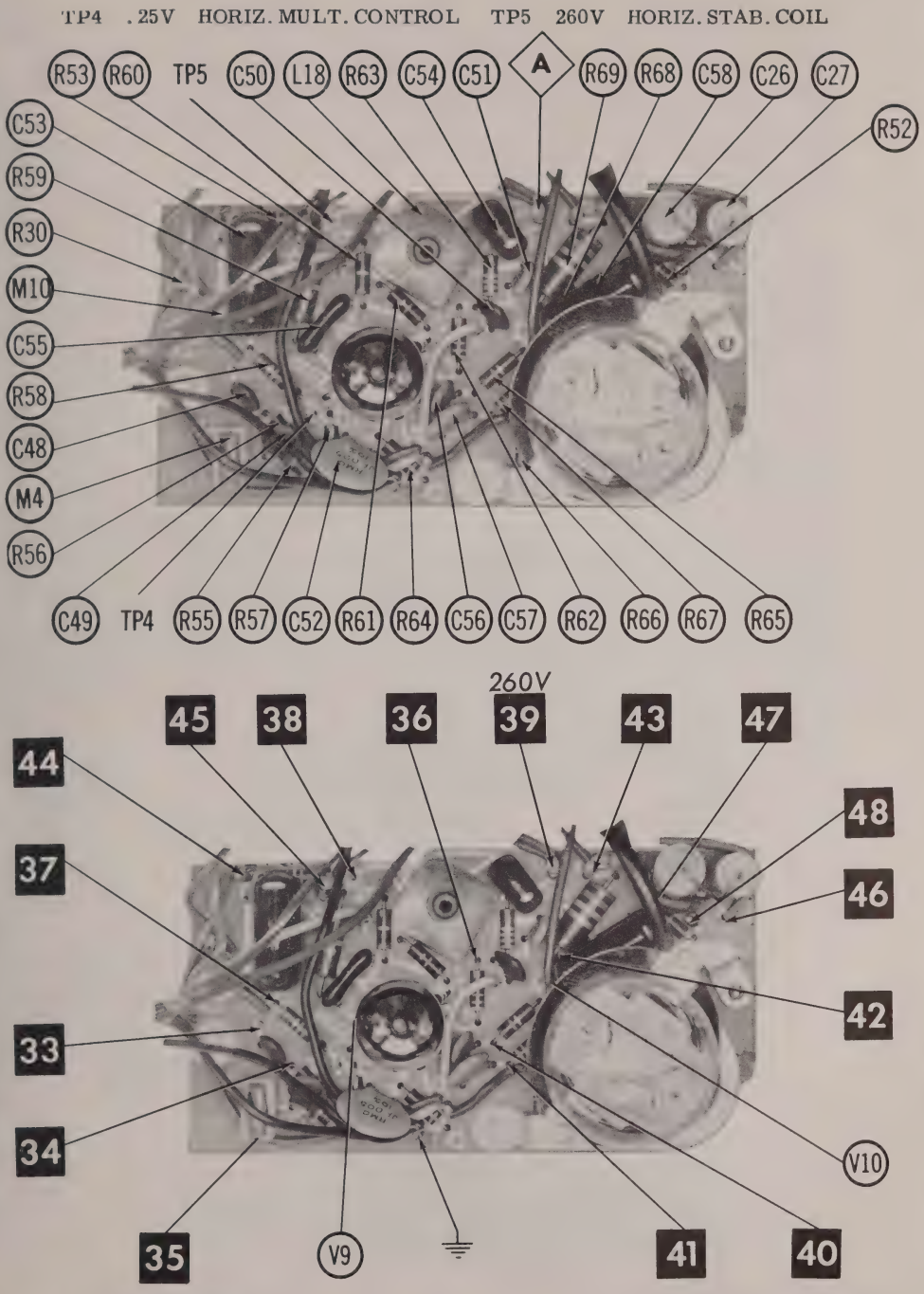




MAIN PRINTED BOARD

(CAPACITOR, MISC., TEST POINT IDENT.)

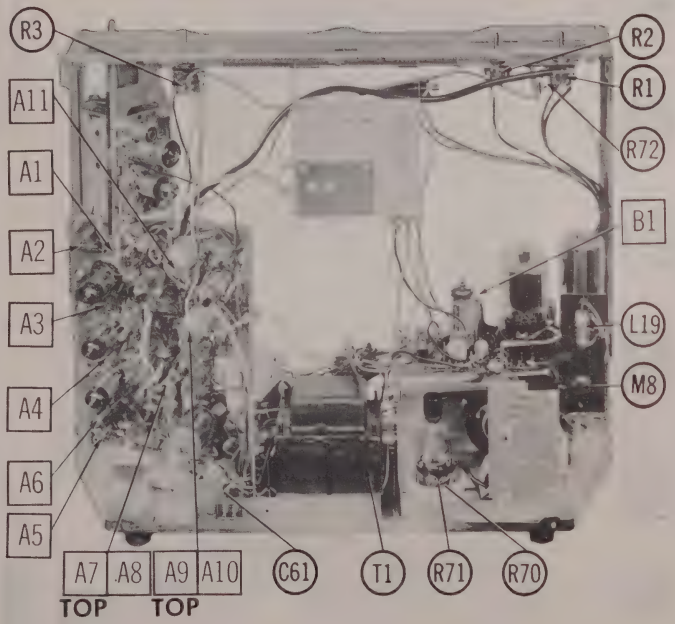
(RESISTOR, INDUCTOR IDENT.)



A Howard W. Sams CIRCUITRACE Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

HORIZ SWEEP PRINTED BOARD



CHASSIS—REAR VIEW

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	725K	47Ω	FIL	FIL	▲242Ω	■470Ω	0Ω		
V2	6BZ6	■68K	INF	FIL	FIL	†280Ω	†280Ω	▲22Ω		
V3	6CB6A	.1Ω	180Ω	FIL	FIL	■220Ω	■220Ω	0Ω		
V4	6CX8	0Ω	1.9meg	■22K	FIL	FIL	82Ω	1meg	■470Ω	†5100Ω
V5	6AU6A	3.5Ω	0Ω	FIL	FIL	■10K	■10K	270Ω		
V6	6DT6	4Ω	560Ω	FIL	FIL	†560K	■4700Ω	470K		
V7	6CU5	¶60K	NC	FIL	FIL	420K	†530Ω	†770Ω		
V8	6DN7	●2.2meg	†2300Ω	0Ω	●1meg	●†3.5meg	0Ω	FIL	FIL	
V9	6CG7	†15K	2.3meg	820Ω	FIL	FIL	†76K	62K	820Ω	0Ω
V10	6FW5	82□K	FIL	0Ω	NC	†20Ω	NC	FIL	†18K	
V11	6W4GTA	NC	NC	¶	NC	†60Ω	NC	FIL	FIL	
V12	1K3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †355Ω
V13	5U4GB	NC	¶80K	NC	43Ω	NC	40Ω	NC	¶80K	
V14	19ZP4	FIL	NC	†680K	†1meg	TP	●100K	■150K	FIL	
V201	6FS5	560K	0Ω	FIL	FIL	†60Ω	■0Ω	0Ω		
V202	6FG7	15K	■10K	0Ω	FIL	FIL	■0Ω	■0Ω	0Ω	225K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM PIN 2 OF V13.
† MEASURED FROM PIN 3 OF V11.
NC NO CONNECTION
■ MEASURED FROM PIN 1 OF V7.
▲ MEASURED FROM PIN 2 OF V2.
TP TIE POINT

RESISTANCE MEASUREMENTS

DISASSEMBLY INSTRUCTIONS

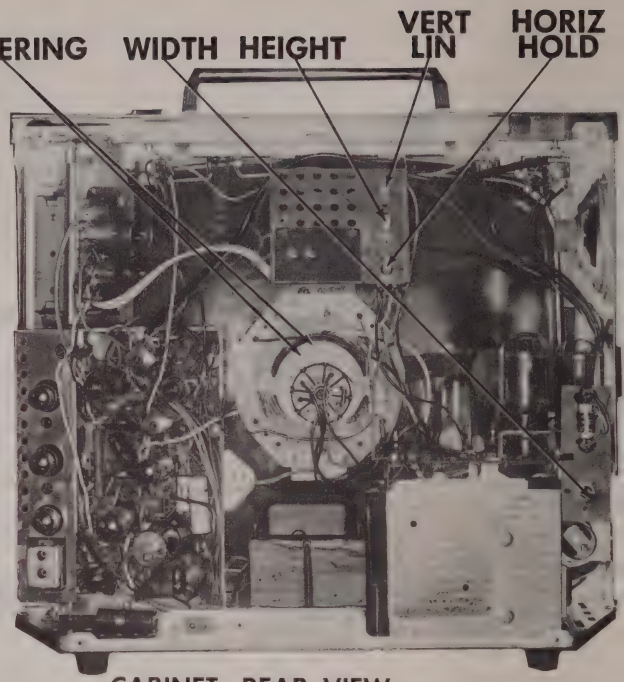
NOTE: Most components accessible from rear of set for servicing by removing rear cover (cabinet back). Those components (not accessible from the rear) may be reached by removing 4 screws holding the front assembly to the chassis. Then swing assembly out.

CABINET BACK (REAR COVER) REMOVAL

1. Disconnect antenna leads.
2. Remove 8 metal screws holding rear cover.
3. Remove rear cover.

CHASSIS AND PICTURE TUBE REMOVAL

1. Remove rear cover.
2. Disconnect hi voltage lead, picture tube socket; loosen yoke clamp and carefully slide yoke off of picture tube neck.
3. Place receiver (face down) on soft surface.
4. Remove 4 screws (from the rear) holding mask and picture tube assembly to chassis.
5. Lift chassis from front assembly.
6. Remove picture tube.



CABINET—REAR VIEW

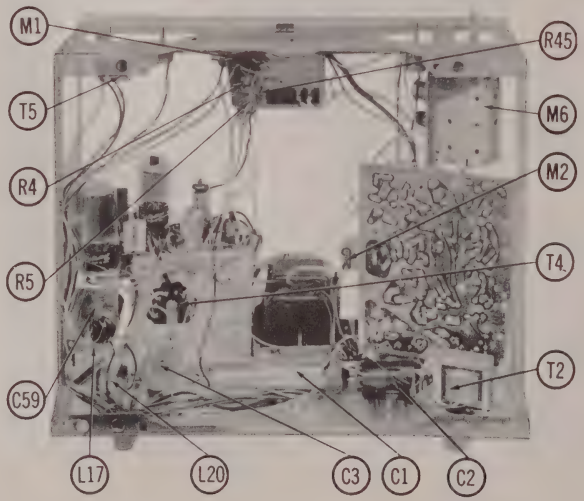
HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Tune the receiver to a weak signal and adjust the controls for a normal picture.

Connect a short clip lead from TP-4 to chassis. Connect a 1000 ohm resistor from TP-5 to point (A).

Adjust the Horizontal Hold control to the point where the picture appears to float back and forth across the screen.

Remove the 1000 ohm resistor and adjust the Horizontal Frequency Slug (B1) until the picture again appears to float back and forth across the screen. Remove the clip lead from TP-4 and chassis.



CHASSIS—FRONT VIEW

PHOTOFACT® Folder

HOFFMAN MODELS M9003, SP9003, W9003 (Ch. 427)

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

HOFFMAN MODELS M9003, SP9003, W9003 (Ch. 427)

MODEL M9003

HOFFMAN MODELS M9003, SP9003, W9003 (Ch. 427)

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HOFFMAN MODELS M9003, SP9003, W9003 (Ch. 427)

HOFFMAN MODELS M9003, SP9003, W9003 (Ch. 427)

MODEL M9003

TRADE NAME	HOFFMAN MODELS	TV Chassis	FM-AM Tuner Chassis	Preamp. Chassis	Power Amp. Chassis	VHF Tuner Assembly
	M9003, SP9003, W9003	427	1146	1145	1148	710033

MANUFACTURER	Hoffman Electronics Corporation, Consumer Products Div., 6200 S. Avalon Blvd., Los Angeles 3, Calif.
TYPE SET	Television Receiver (With FM-AM Tuner, Dual Channel Preamp. and Power Amp., and 4 Speed Automatic Record Changer *)
TUBES	TV - VHF, Seventeen FM-AM Tuner - Eight Preamp. - One Power Amp. - Seven
POWER SUPPLY	110-120 Volts AC, 60 Cycle
RATING	TV, FM Tuner, & Amplifiers: 375 Watts, 3.4 Amp. @ 117 Volts AC TV & Amplifiers: 355 Watts, 3.25 Amp. @ 117 Volts AC TV: 210 Watts, 1.9 Amp. @ 117 Volts AC FM & AM with Amplifiers: 165 Watts, 1.5 Amp. @ 117 Volts AC Amplifiers (Function Selector in Phono Pos.): 145 Watts, 1.35 Amp. @ 117 Volts AC, Less Phono Motor
TUNING RANGE	TV: Channels 2 thru VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier) FM: 88 - 108MC (10.7MC IF) BC: 540 - 1600KC (455KC IF)

* FOR SERVICE INFORMATION ON RECORD CHANGER - SEE PHOTOFACT SET 482 FOLDER 11

SERVICING IN THE FIELD

FOR HORIZ. SWEEP & CONTROL ADJUSTMENTS - SEE BACK PAGE

SAFETY GLASS

The safety glass is an integral part of the picture tube.

FUSE

Power Amp.: A fuse is used for low voltage power supply protection. (See "Chassis - Top View" for location of M10).

FUSE DEVICE

TV: A Circuit Breaker is used for low voltage power supply protection, and may be reset by depressing the reset button. (See "Tube Placement Chart" for location.)

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, it is necessary to remove the rear cover.

TV AUDIO LEVEL CONTROL

Adjust this control so the audio level from the TV is approximately the same as the audio level from the FM-AM Tuner and Phono.

AGC

The AGC may be varied by means of an AGC Control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by means of a Focus Control. (See "Tube Placement Chart" for location.)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the AM Reject (Buzz) control for MINIMUM buzz and maximum sound. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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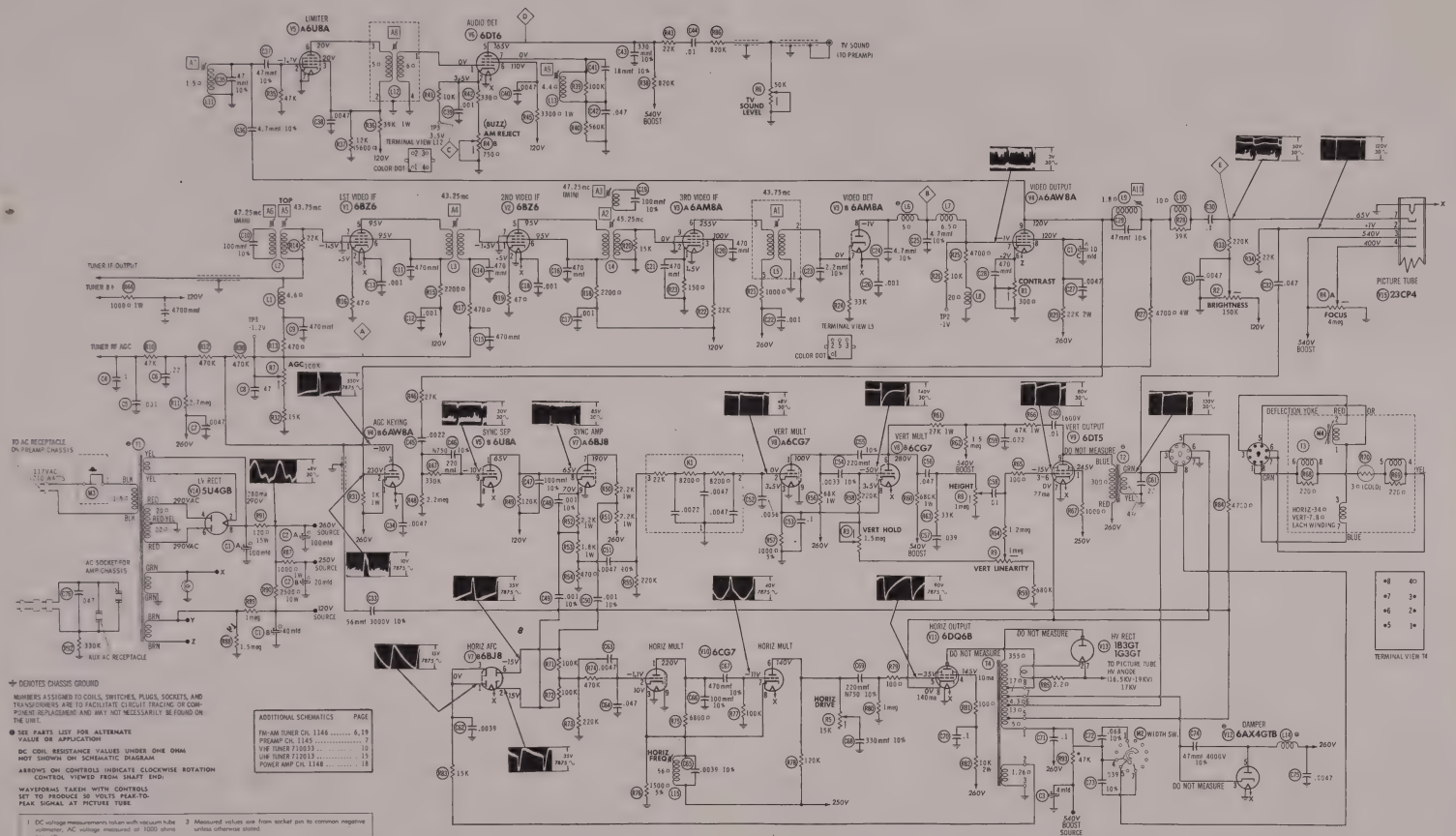
KC753

SET 543 FOLDER 2



⏚ DENOTES CHASSIS GROUND

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION CONTROL VIEWED FROM SHAFT END

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE

ADDITIONAL SCHEMATICS	PAGE
FM-AM TUNER CH. 1146	6, 19
PREAMP CH. 1145	7
VHF TUNER 710033	10
UHF TUNER 712013	15
POWER AMP CH. 1148	18

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket
3. Measured values are from socket pin to common negative unless otherwise stated
4. Line Voltage maintained at 117 volts for voltage readings
5. All controls set for normal operation, no signal applied

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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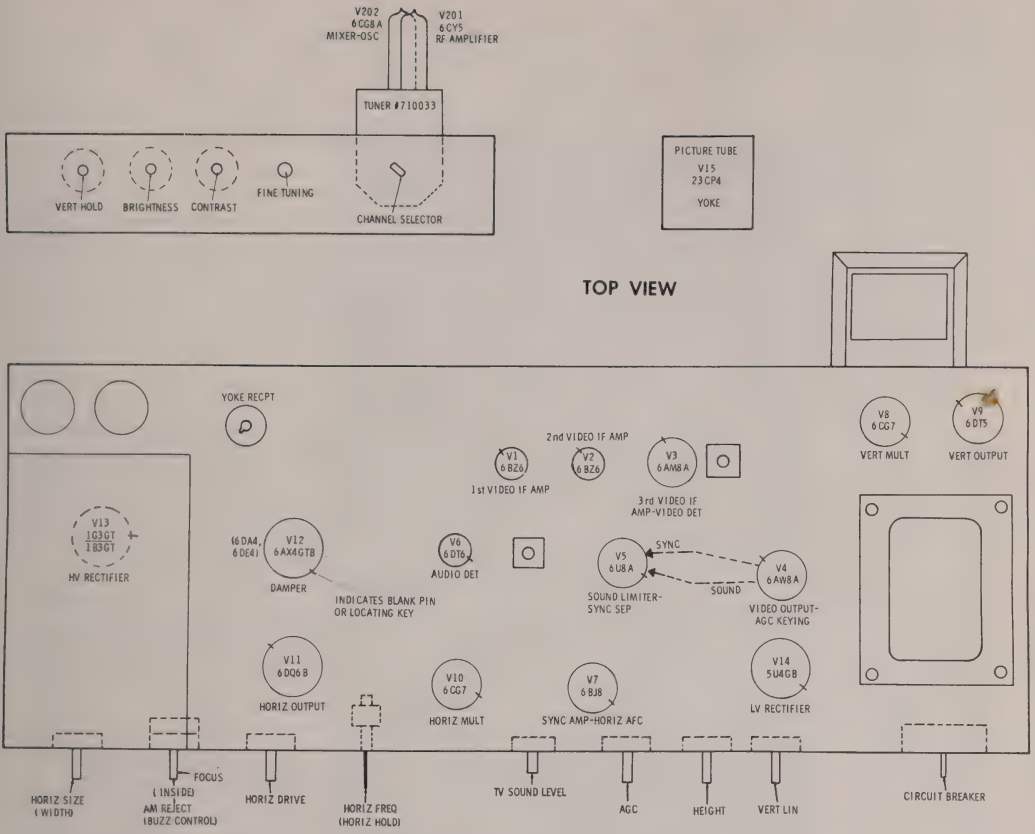
HOFFMAN MODELS M9003, SP9003, W9003 (Ch. 427)

TV TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Circuit Breaker, V14

SWEEP FAILURE
No raster, has sound V10, V11, V12, V13, V15
No vertical deflection V8, V9
Poor vert. linearity or foldover V8, V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, V14
Vert. off freq. V8
Horiz. off freq. V7, V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V15
Has pic, no sound V5, V6, (See Amp. Chassis 1145 and 1148)
Overloaded picture V4

SYNC FAILURE
No vert. sync V5, V7
No horiz. sync V5, V7
No vert. or horiz. sync V5, V7

HOFFMAN MODELS M9003, SP9003, W9003 (Ch. 427)

FOLDER 2

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Connect bias as under "Video IF Alignment".
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication on VTVM.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect the negative lead of a 3 volt bias supply to point (A). Positive to chassis.
Connect a 1000mmf capacitor across VTVM and scope leads.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	Not used	43.75MC	Set Selector Between Channels	USE VTVM DC probe thru 10K to point (B). Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	45.25MC	"	"	A2	"
3.	"	"	47.25MC	"	"	A3	Adjust for MINIMUM deflection.
4.	"	"	43.25MC	"	"	A4	Adjust for maximum deflection.
5.	"	"	43.75MC	"	"	A5	"
6.	"	"	47.25MC	"	"	A6	Adjust for MINIMUM deflection.
7.	"	"	45.5MC	"	"	Mixer Plate Coil	Adjust for maximum deflection.
8.	"	44.0MC (10MC Swp)	45.0MC 45.75MC	"	Vert. Amp. thru 10K to point (B). Low side to chassis.		Check for response similar to Fig. 1. If necessary, retouch A1, A2 and A4 for desired response.

SOUND IF ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	High side thru .005mfd to point (B). Low side to chassis.	4.5MC (Unmod)	Between channels	DC probe thru 10K to point (C). Common to chassis.	A7, A8	Detune A9 by turning core fully clockwise. Adjust A7 and A8 for maximum deflection. Reduce the signal generator output to keep meter reading between 3.5 and 4.5 volts at all times.
10.	"	"	"	DC probe thru 10K to point (D). Common to chassis	A9	Increase generator output to maximum and adjust A9 for MINIMUM deflection. Continue turning core counter-clockwise until meter reads from 97 to 103 volts.
11.	Tune in a TV station and if necessary, retouch A9 SLIGHTLY for undistorted sound. Adjust R4B for MINIMUM Buzz.					

4.5MC TRAP ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12.	High side thru .005mfd to point (B). Low side to chassis.	4.5MC (Unmod)	Between Channels	RF probe to point (E). Common to chassis.	A10	Adjust for MINIMUM deflection.

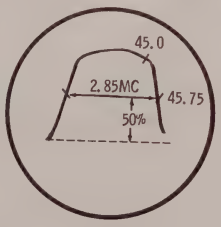
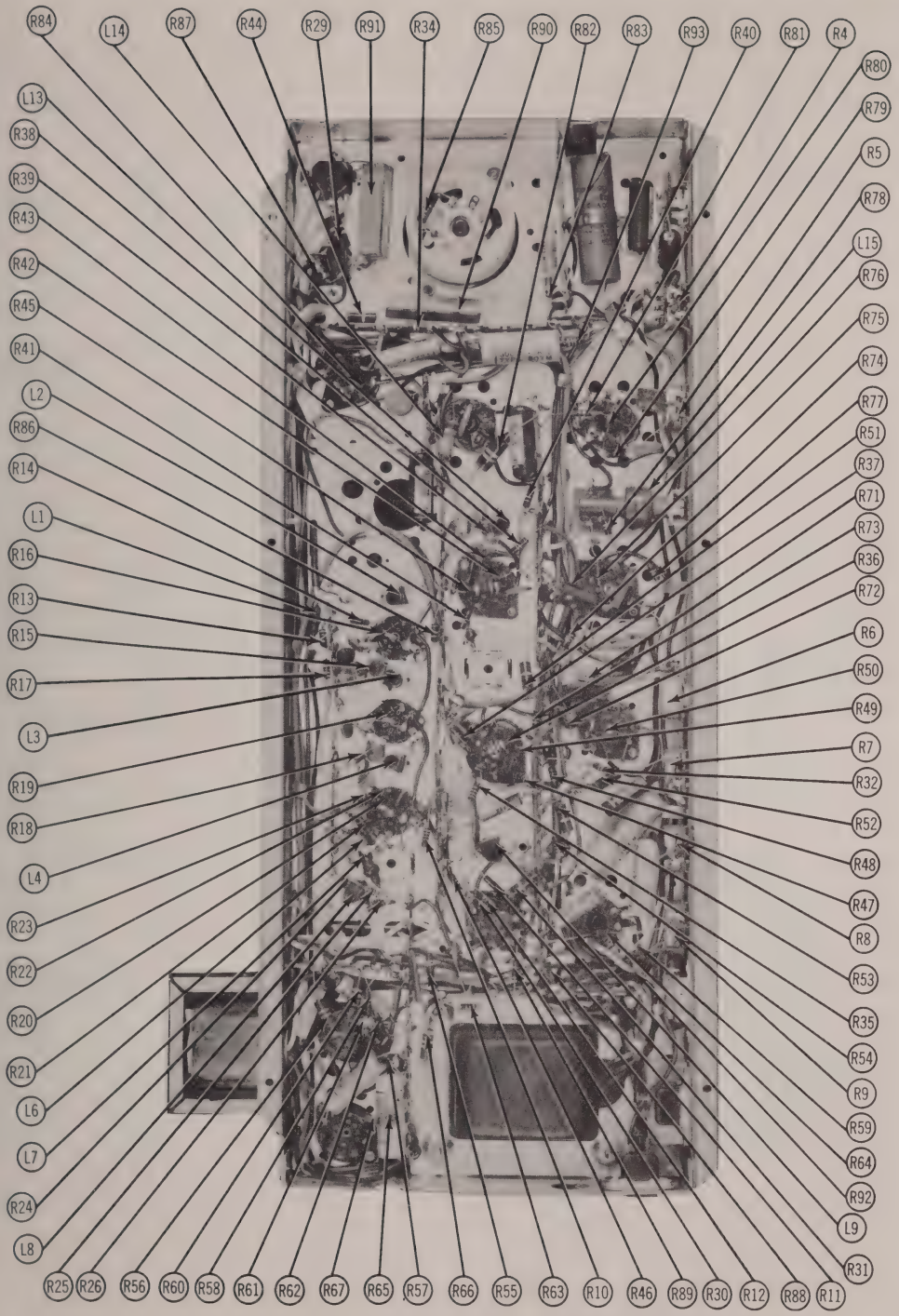
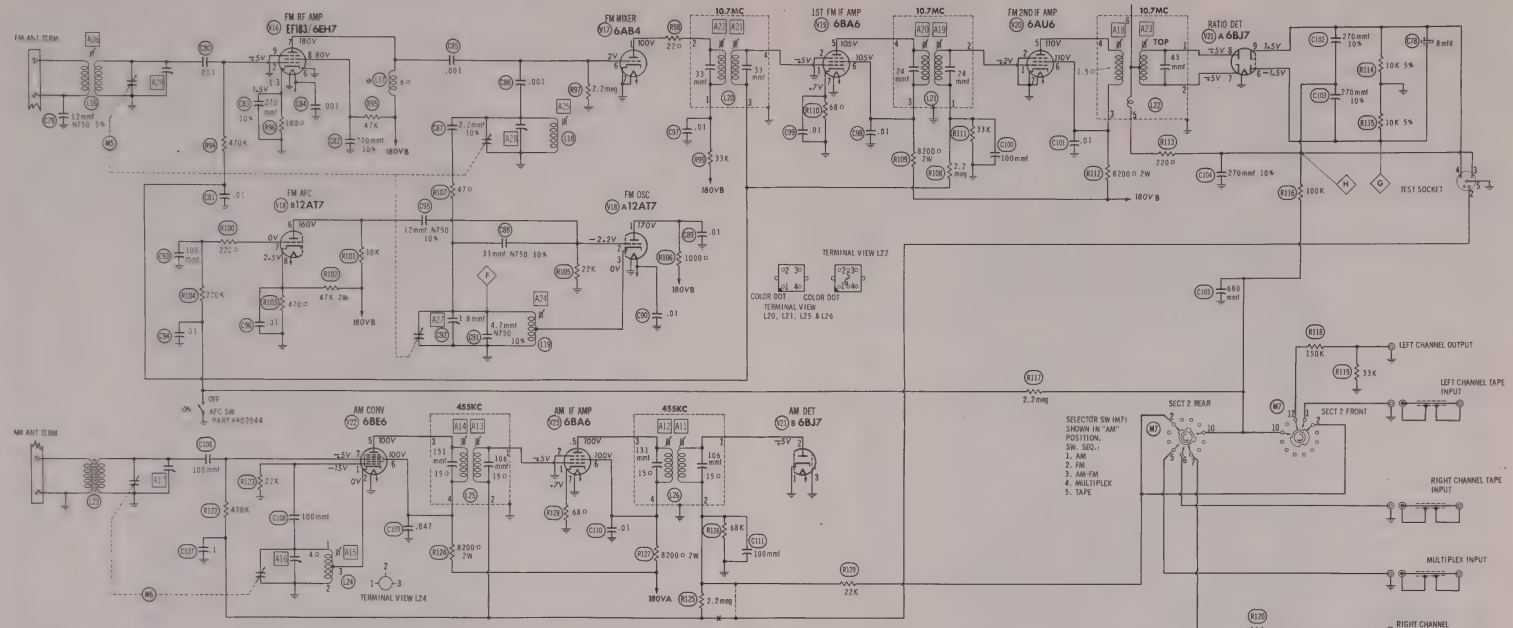


FIG. 1



TV CHASSIS BOTTOM VIEW-RESISTOR, INDUCTOR IDENT.

SET 543 FOLDER 2

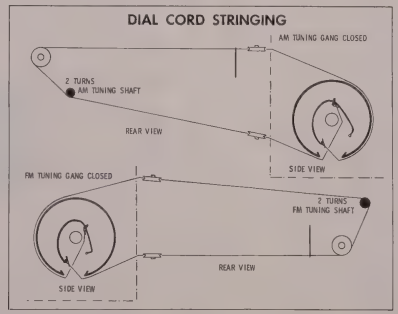


RESISTANCE READINGS

TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V16 EF183 6EH7	180Ω	2.7meg	180Ω	FIL	FIL	0Ω	*2400Ω	150K	0Ω
V17 6AB4	*35K	0Ω	FIL	FIL	0Ω	2.2meg	0Ω		
V18 12AT7	*3400Ω	22K	.1Ω	FIL	FIL	†12K	220K ≠2.6meg	470Ω	FIL
V19 6BA6	2.2meg	0Ω	FIL	FIL	†10K	†10K	68Ω		
V20 6AU6	33K	0Ω	FIL	FIL	†10K	†10K	0Ω		
V21 6BJ7	0Ω	50K	0Ω	FIL	FIL	10K	280K	280K	10K
V22 6BE6	22K	4Ω	FIL	FIL	†10K	†10K	2.7meg		
V23 6BA6	2.0meg	0Ω	FIL	FIL	†10K	†10K	68Ω		

ALL TUNER MEASUREMENTS MADE IN "AM-FM" POSITION WITH AFC "OFF" UNLESS OTHERWISE DESIGNATED.
* MEASURED WITH AFC "ON" POSITION. † MEASURED FROM PIN 8 OF V31.

DIAL CORD STRINGING



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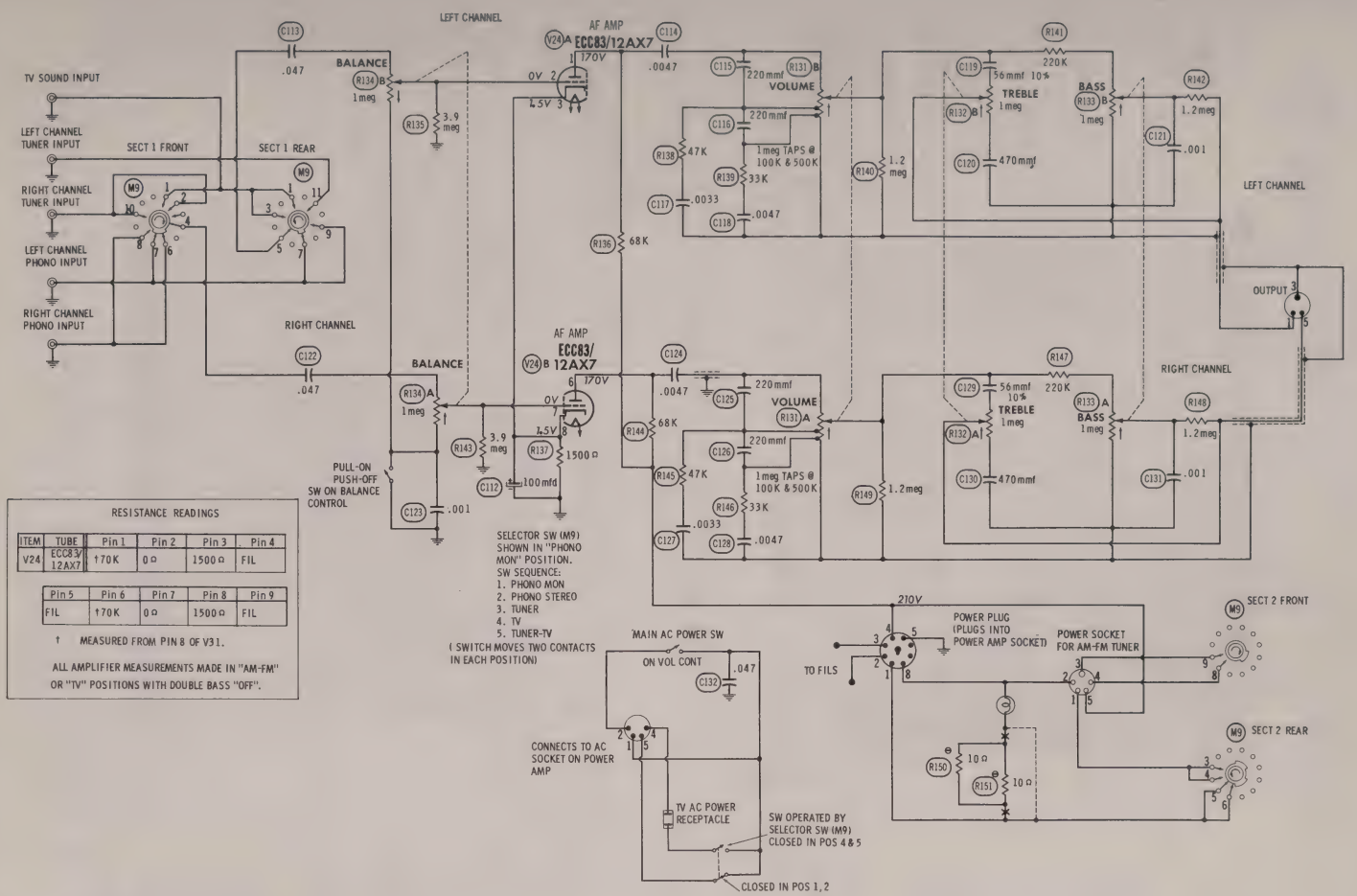
FM-AM TUNER CHASSIS 1146



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4
V24	ECC83/ 12AX7	†70K	0Ω	1500Ω	FIL

Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
FIL	†70K	0Ω	1500Ω	FIL

† MEASURED FROM PIN 8 OF V31.

ALL AMPLIFIER MEASUREMENTS MADE IN "AM-FM" OR "TV" POSITIONS WITH DOUBLE BASS "OFF".

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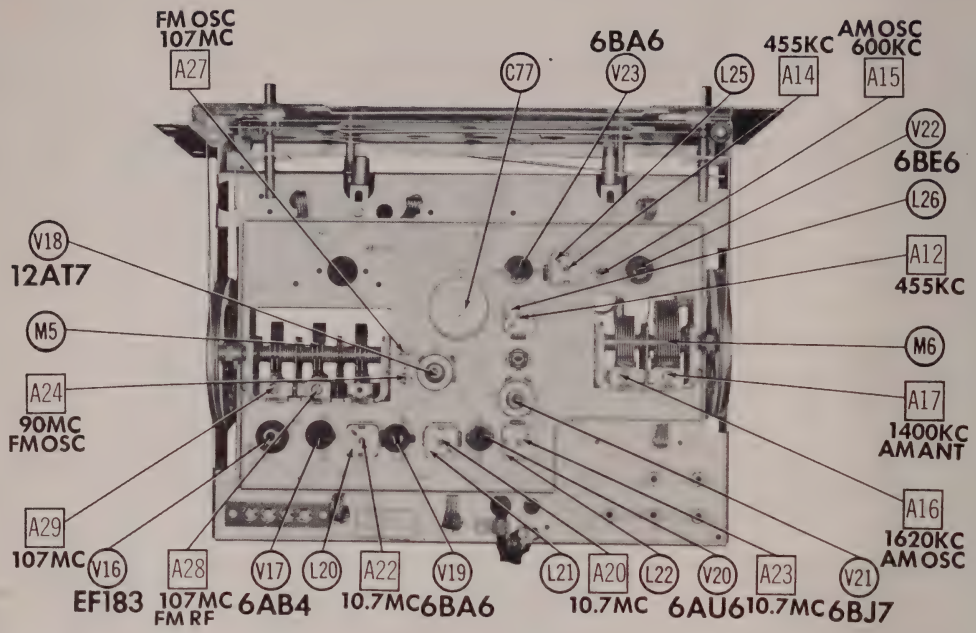
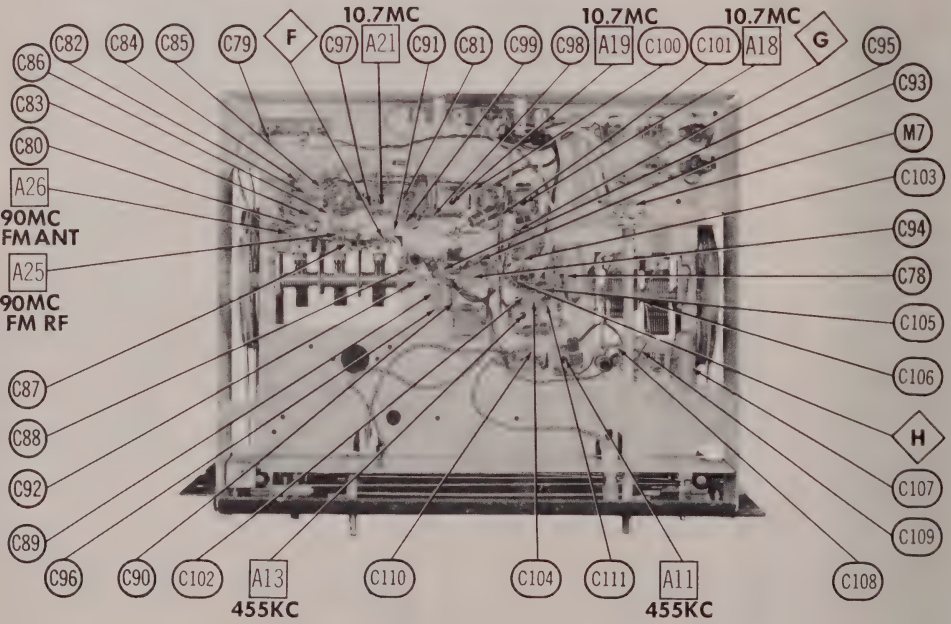
PREAMP CHASSIS 1145

HOFFMAN MODELS M9003, SP9003, W9003 (Ch. 427)



FM-AM TUNER - TOP VIEW



FM-AM TUNER BOTTOM VIEW - ALIGN., CAPACITOR IDENT.

FM–AM ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.
Use only enough generator output to provide a usable indication.
Suggested Alignment Tools: All thru A14, A18 thru A23 .... GENERAL CEMENT #5097, 8727
WALSCO #2515
A15, A24, A27..... GENERAL CEMENT #8721, 8722
WALSCO #2519
A16, A17, A28, A29 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A25, A26 ..... GENERAL CEMENT #8282, 8606, 8606L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

AM ALIGNMENT - SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (440~ Mod.)	(AM) Tuning gang fully open	AC probe across tuner output cable	A11, A12, A13, A14	Adjust for maximum deflection.
2.	High side thru 150mmf to AM antenna terminal. Low side to chassis.	600KC	600KC	"	A15	"
3.	"	1620KC	Tuning gang fully open	"	A16	"
4.	"	1400KC	1400KC	"	A17	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM - SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .01mfd to point (F). Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference	DC probe to point (G). Common to chassis.	A18, A19, A20, A21, A22	Adjust for maximum deflection.
6.	"	"	"	DC probe to point (H). Common to chassis.	A23	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE - SELECTOR IN FM POSITION

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side thru .01mfd to point (F). Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference	Vert. Amp. to point (G). Low side to chassis.	A18, A19, A20, A21, A22	Disconnect stabilizing capacitor (C78). Adjust for maximum gain and symmetry of response similar to Fig. 2. Reconnect C78.
6.	"	"	"	Vert. Amp. to point (H). Low side to chassis.	A23	Adjust to place marker at the center of crossover lines similar to Fig. 3. SLIGHTLY retouch A18 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT - SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals with 120Ω in each lead.	90MC (Unmod.)	(FM) 90MC	DC probe to point (G). Common to chassis.	A24, A25, A26	Adjust for maximum output.
8.	"	107MC	107MC	"	A27, A28, A29	Adjust for maximum deflection. Repeat steps 7 and 8.

FIG. 2

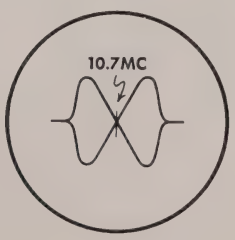


FIG. 3

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VHF TUNER 710033

VHF TUNER PARTS LIST AND DESCRIPTIONS

710033

TUBES

ITEM No.	GENERAL ELECTRIC • USE	GENERAL ELECTRIC • TYPE	ITEM No.	RAYTHEON • SYLVANIA • USE	RAYTHEON • SYLVANIA • TYPE
V201	RF Amp.	6CY5	V202	Mixer - Osc.	6CG8A

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	10		NPO-DI 10	DTZ-100	C10QIC	CCTO-100	CNO-410	10TCC-Q10
C202	5, 8 10%				C10Y5C			10TCC-Y5S
C203	10		NPO-DI 10	DTZ-10	C10QIC	CCTO-100	CNO-410	10TCC-Q10
C204	1000		EF-001	MFT-1000		CCF-102	CT280A	
C205	1000		NPO-DI 10	DD-102	BYA10D1	CCD-103	B-210	5HK-DI0
C206	1000		EF-001	MFT-1000		CCF-102	CT280A	
C207	100		EF-0001	MFT-100				
C208	10		NPO-DI 10	DTZ-10	C10QIC	CCTO-100	CNO-410	10TCC-Q10
C209	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-DI0
C210	39							
C211	1000		EF-001	MFT-1000		CCF-102	CT280A	
C212	1000		BPD-001	DD-102	BYA10D1	CCD-103	B-210	5HK-DI0
C213	10		NPO-DI 10	DTZ-10	C10QIC	CCTO-100	CNO-410	10TCC-Q10
C214	10		NPO-DI 10	DTZ-10	C10QIC	CCTO-100	CNO-410	10TCC-Q10
C215	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-DI0
C216	1000		EF-001	MFT-1000		CCF-103	CT280A	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	10K			
R202	22K			
R203	220K			
R204	22000			
R205	47K			
R206	10K			
R207	15K			
R208	10K			

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UHF TUNER 712013

HOFFMAN MODELS M9003, SP9003, W9003 (Ch. 427)

FOLDER 2

FM–AM TUNER PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	GENERAL ELECTRIC — USE	GENERAL ELECTRIC — TYPE	ITEM No.	RAYTHEON — USE	RAYTHEON — TYPE
V16	FM RF Amplifier	6BH6/6EH7	V20	2nd FM IF Amp.	6AU6
V17	FM Mixer	6AB4	V21	Ratio Det. - AM Det.	6BJ7
V18	FM Osc. - FM AFC	12AT7	V22	AM Converter	6BE6
V19	1st FM IF Amp.	6BA8	V23	AM IF Amp.	6BA6

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP	RATING VOLT.	REPLACEMENT DATA HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C77	30	350	856501	AFHD-39 †	A0516	FH176	TMS-1790	TVL-1820	
C78	8	150	856044	PRS405	BBR8-150	TC41	TD-8-150	TVA-1405	

† Use mounting hardware MW-4 or BW-4.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C79	12 N750 5%			TCN-12	C10Q12U		CNT-412	10TCU-Q12
C80	.001		BPD-001	DD-103	BYA10DI	CCD-102	B-210	5HK-D10
C81	.01		BPD-01	DD-103	BYA10BL	CCD-103	B-110	5HK-B10
C82	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C83	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C84	.001		BPD-001	DD-103	BYA10DI	CCD-103	B-210	5HK-D10
C85	.002		BPD-001	DD-103	BYA10DI	CCD-103	B-210	5HK-D10
C86	.002		BPD-001	DD-103	BYA10DI	CCD-103	B-210	5HK-D10
C87	2.2 10%		NPO-SI 2.2	TCZ-SI2.2	C10Y23C	CCTO-SI2.2	CNO-S22	10TCC-Y22
C88	33 N750 10%		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CNT-433	10TCU-Q33
C89	.01		BPD-01	DD-103	BYA10BL	CCD-103	B0U10	5HK-B10
C90	.01		BPD-01	DD-103	BYA10BL	CCD-103	B-110	5HK-B10
C91	4.7 N750 10%			TCN-5	C10Y5C	CCTN-050	CNT-547	10TCU-Y50
C92	1-8		#872006	839-10				
C93	100		BPD-001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C94	.01		BPD-01	DD-103	BYA10BL	CCD-103	B-110	5HK-B10
C95	12 N750 10%			TCN-12	C10Q12C		CNT-412	10TCU-Q12
C96	.01		BPD-01	DD-103	BYA10BL	CCD-103	B-110	5HK-B10
C97	.01		BPD-01	DD-103	BYA10BL	CCD-103	B-110	5HK-B10
C98	.01		BPD-01	DD-103	BYA10BL	CCD-103	B-110	5HK-B10
C99	.01		BPD-01	DD-103	BYA10BL	CCD-103	B-110	5HK-B10
C100	100		BPD-001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C101	.01		BPD-01	DD-103	BYA10BL	CCD-103	B-110	5HK-B10
C102	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C103	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C104	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C105	680		DI-680	DD-681	BYA10T68	CCD-681	B-368	10TS-T68
C106	100		BPD-001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C107	.1 200V		P388N-1	DP-104	CUB2P1	2DP-3-104	GEM-2P1	2TM-P10
C108	100		BPD-001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C109	.047		BPD-04	DD-503	CUB6S47	6DP-3-473	GP150	5HK-B50
C110	.01		BPD-01	DD-103	BYA10BL	CCD-103	B-110	5HK-B10
C111	100		BPD-001	DD-101	L10T1	CCD-101	GP310	10TS-T10

Hoffman Part Number

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R94	470K			
R95	47K			
R96	180Ω			
R97	2.2meg			
R98	22Ω			
R99	33K			
R100	220Ω			
R101	10K			
R102	47K 2W			
R103	470Ω			
R104	220K			
R105	22K			
R106	1000Ω			
R107	47Ω			
R108	2.2meg			
R109	9200Ω 2W			
R110	68Ω			
R111	33K			
R112	8200Ω 2W			
R113	220Ω			
R114	10K 5%			
R115	10K 5%			
R116	100K			
R117	2.2meg			
R118	150K			
R119	33K			
R120	150K			
R121	33K			
R122	470K			
R123	22K			
R124	8200Ω 2W			
R125	2.2meg			
R126	68K			
R127	8200Ω 2W			
R128	68Ω			
R129	22K			
R130	470Ω 1W			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA HOFFMAN PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L15	FM Ant. Trans.	778003					① IRC Part #CL-1.
L17	RF Choke (5.6uh)	750009 ①	SW-631	4609	RTC-8519	T859	
L18	FM RF	778001					
L19	FM Osc.	778022					
L20	1st FM IF	760012	FM-254	1463	RTC-8599	T833	
L22	2nd FM IF	760013	FM-254	1463	RTC-8599	T833	
L23	Ratio Detector	774004	FM-255	1465	RTC-8600	T835	
L23	Loopstick	934002	BC-418	703-A		T532	
L24	AM Osc.	778019	BC-393	69-OSC	RTC-8646	T912	
L25	1st AM IF	760011	BC-352	13-C1	RTC-8632	T807	
L26	2nd AM IF	760011	BC-353	13-C2	RTC-8633	T808	

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
MS	FM Tuning Cap	872017	3 Gang
MS	AM Tuning Cap	872015	2 Gang (Ant. 7-288mmf, Osc. 9-194mmf)
MT	Switch	903040	Function Selector (Rotary Type)

PREAMP PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	GENERAL ELECTRIC — USE	GENERAL ELECTRIC — TYPE	ITEM No.	SYLVANIA — USE	SYLVANIA — TYPE
V34	Left Channel AF Amp. - Right Channel AF Amp.	ECC83/12AX7			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C113	100	15	856035	PRS1100	BBR100-15	TC3501	TD-100-15	TVA-1160	

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C113	.047		BPD-05	DD-503	CUB6S47	6DP-3-473	GP150	5HK-B50
C114	.0047		BPD-0047	DD-472	BYA10D47M	6DP-1-472	B-247	5HK-D47
C115	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C116	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C117	.0033		BPD-0033	DD-332	BYA10D33	6DP-1-332	B-233	5HK-D33
C118	.0047		BPD-0047	DD-472	BYA10D47M	6DP-1-472	B-247	5HK-D47
C119	56 10%		DI-56	DD-560	L10Q56	CCD-560	GP456	10TS-Q56
C120	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C121	.001		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C122	.047		BPD-05	DD-503	CUB6S47	6DP-3-473	GP150	5HK-B50
C123	.001		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C124	.0047		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C125	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C126	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C127	.0033		BPD-0033	DD-332	BYA10D33	CCD-333	B-233	5HK-D33
C128	.0047		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C129	56 10%		DI-56	DD-560	L10Q56	CCD-560	GP456	10TS-Q56
C130	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C131	.001		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C132	.047 500V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-S147	6TM-S47

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA HOFFMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R131A	1meg *		803069					Volume, Right Channel
B	1meg *							Volume, Left Channel
C	Switch							Push-Pull, Off-On
R132A	1meg		803064	B-70	AD47-1meg-2		FA16A	Treble, Right Channel
B	1meg			SR-70	Not Req.		RU16A	Treble, Left Channel
C	Shaft			Not Req.	FS-3		CS3500	
R133A	1meg		803064	B-70	AD47-1meg-2		FA16A	Bass, Right Channel
B	1meg			SR-70	Not Req.		RU16A	Bass, Left Channel
C	Shaft			Not Req.	FS-3		CS3500	
R134A	1meg		803065					Balance, Right Channel
B	1meg							Balance, Left Channel
C	Switch							Push-Pull, Double Base

* Taps @ 100K and 500K.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R135	3.9meg			
R136	68K			
R137	1500Ω			
R138	47K			
R139	33K			
R140	1.2meg			
R141	220K			
R142	1.2meg			
R143	3.9meg			

Note 1. May not be used in some versions.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R144	68K			
R145	47K			
R146	33K			
R147	220K			
R148	1.2meg			
R149	1.2meg			
R150	10Ω			Note 1
R151	10Ω			Note 1

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA HOFFMAN PART No. CARTRIDGE	HOFFMAN PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M8	990528	Not Req.	17D	Not Req.	286D	S1-IS * (LP) S1-2D * (78)	8TA4-SD	N-STA-SD *	

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M9	Switch	903041	Function Selector (Rotary Wafer Type)

POWER AMP PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	GENERAL ELECTRIC — USE	GENERAL ELECTRIC — TYPE	ITEM No.	RAYTHEON — USE	RAYTHEON — TYPE
V25	Left Channel AF Amp. - Phase Inverter	7199	V28	Right Channel AF Amp. - Phase Inverter	7199
V26	Left Channel Output	EL84/6BQ5	V29	Right Channel Output	EL84/6BQ5
V27	Left Channel Output	EL84/6BQ5	V30	Right Channel Output	EL84/6BQ5
			V31	Rectifier	5U4GB

POWER AMP (Continued)

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP	RATING VOLT.	REPLACEMENT DATA HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C133A	40	450	857107	AFH4-79-60	C1110	FP426.2	TMT-3834	TVL-3746	
B	80	450			BBR100-25		TD-100-25	TVA-1207	
C	100	25							
D	100	25							
C134A	40	450	857107	AFH4-79-60	C1110	FP426.2	TMT-3834	TVL-3746	
B	80	450			BBR100-25		TD-100-25	TVA-1207	
C	100	25							
D	100	25							

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C135	.22 400V 10%		V84C4P22-10%		PM4P22	4DP-5-234	GEM-4022	4TM-P22
C136	330		DI-330	DD-331	L10T33	CCD-331	B-333	10TS-T33
C137	.1 600V		P688N-1		DP-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C138	.0015 1500V		HVD-15-1500	DD30-152	HVC15D15	15DP-2-152	HVC15D15	15DP-2-152	30GA-D15
C139	.1 600V		P688N-1		DP-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C140	.0015 1500V		HVD-15-1500	DD30-152	HVC15D15	15DP-2-152	HVC15D15	15DP-2-152	30GA-D15
C141	.0039 10%		1464-0039		CUB3D39	3DP-5-392	CM-20B-392K	MC2462.5	MB-239
C142	1.0 100V*		P288N-1.0		CUB2W1	1DP-5-105	GEM-2	2TM-M5
C143	.22 400V 10%		V84C4P22-10%		CUB4P22	4DP-5-234	GEM-4022	4TM-P22
C144	330		DI-330	DD-331	L10T33	CCD-331	B-333	10TS-T33
C145	.1 600V		P688N-1		DP-104	CUB6P1	6DP-4-104	GEM-601	6TM-S10
C146	.0015 1500V		HVD-15-1500	DD30-152	HVC15D15	15DP-2-152	HVC15D15	15DP-2-152	30GA-D15
C147	.1 600V		P688N-1		DP-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C148	.0015 1500V		HVD-15-1500	DD30-152	HVC15D15	15DP-2-152	HVC15D15	15DP-2-152	30GA-D15
C149	.0039 10%		1464-0039		CUB3D39	3DP-5-392	CM-20B-392K	MC2462.5	MB-239
C150	1.0 100V		P288N-1.0		CUB2W1	1DP-5-105	GEM-2	2TM-M5
C151	.047 1600V		P1664CM-047		CUB6S47	16DP-5-473	GEM-1615		
C152	.05 800V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615		6TM-S50

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA HOFFMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R152A	250Ω	½	800014	TT-2	A43-200	B11-201	R250L	Hum Balance
B	Shaft			Not Req.	FS8-1/4	TM4	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R153	3.9meg			
R154	180K			
R155	390K			
R156	68Ω			
R157	470Ω			
R158	2700Ω			
R159	120K			
R160	120K			
R161	1000Ω			
R162	220K			
R163	220Ω			
R164	68Ω			
R165	1000Ω			
R166	220K			
R167	2200Ω			
R168	68Ω			
R169	1500Ω 2W			
R170	3.9meg			
R171	120K			
R172	390K			
R173	68Ω			
R174	470Ω			
R175	2700Ω			
R176	120K			
R177	120K			
R178	1000Ω			
R179	220K			
R180	220Ω			
R181	68Ω			
R182	1000Ω			
R183	220K			
R184	220Ω			
R185	68Ω			
R186	1500 2W			
R187	1000Ω 10W		PW10-1000	10W-SQ-1000
R188	820Ω 10W		PW10-820	10W-SQ-820
R189	100Ω 10W		PW10-100	10W-SQ-100
R190	220Ω			

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA HOFFMAN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	117V @ 1.5A	640VCT @ 200A DC	5V @ 3A	T160M-3 ①					① Alternate Part #T160J.
	SEC. 3	SEC. 4	SEC. 5						
	6.3V @ 4.2A	6.3V @ 3A							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA HOFFMAN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	9000Ω CT	16Ω	724029	A-3138 ①	A-3585 ①	22393		① Drill new mounting hole(s).
T7	9000Ω CT	16Ω	724029	A-3138 ①	A-3585 ①	22393		

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA HOFFMAN PART No.	QUAM PART No.	NOTES
SP1	10"	PM	14-16Ω	708816	10A8AZ16	
SP2	3½"	PM	14-16Ω	708020	3A1ST	
SP3	3½"	PM	14-16Ω	708020	3A1ST	
SP4	10"	PM	14-16Ω	708816	10A8AZ16	
SP5	3½"	PM	14-16Ω	708020	3A1ST	
SP6	3½"	PM	14-16Ω	708020	3A1ST	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA HOFFMAN PART No. FUSE	HOFFMAN PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M10	3AG	3.2A 125V S/B	954227		31303.2 (3AG 3.2A 125V S/B)	341001	MDX3 2/10	HKP

TV PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No	GENERAL ELECTRIC • USE	TYPE	ITEM No	RAYTHEON • USE	TYPE	ITEM No	SYLVANIA • USE	TYPE
V1	1st Video IF Amp.	6BZ6	V8	Vert. Mult.		6CG7		
V2	2nd Video IF Amp.	6BZ6	V9	Vert. Output		6DT5		
V3	3rd Video IF Amp.- Video Detector	6AM8A	V10	Horiz. Mult.		6CG7		
V4	Video Output - AGC Keying	6AW8A	V11	Horiz. Output		6DQ6B		
V5	Sound Limiter-Sync Sep.	6U8A	V12	Damper		6AX4GTB (5DA4, 6DE4) *		
V6	Audio Detector	6DT6	V13	HV Rectifier		1G3GT/1B3GT		
V7	Sync Amp.- Horiz. AFC	6BJ8	V14	LV Rectifier		5U4GB		

* Alternate

PICTURE TUBE

ITEM No	REPLACEMENT DATA: HOFFMAN PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V15	23CP4	23CP4 ①	23CP4 ①		23CP4 ③	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP	VOLT	REPLACEMENT DATA: HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲100	350	856914	AFH4-05-60	D0044	FP425.6	TMT-3444	TVL3-4635.10 *	
B	●40	350							
C	▲10	350							
C2A	▲200	350	856704	AFH2-100-50	B0726	FP256	TMD-2500	TVL-2813	
B	▲20	350							
C3	4	600	856023	PRH845	BRHV804	TCTI ▲	TD-8-600	TVA-1962	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
▲ Use two units connected in series.

FIXED CAPACITORS

ITEM No	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.1 200V		P388N-1	DF-104	CUB2P1	3DP-3-104	GEM-301	2TM-P10
C5	.001		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C6	.22 200V		P388N-23		CUB2P22	3DP-3-223	GEM-2022	2TM-P22
C7	.0047		BPD-0047	DD-473	BYA10D47M	CCD-472	B-247	5HK-D47
C8	.47 200V		P388N-47		CUB2S47	3DP-5-474	GEM-2022	2TM-P47
C9	470		BPD-00047	DD-471	BYA07471	CCD-471	B-347	10TS-T47
C10	100	10%	1469-0001	TCZ-100	L10T1	CCD-101	MCB235	MS-31
C11	470		BPD-00047	DD-471	BYA07471	CCD-471	B-347	10TS-T47
C12	.001		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C13	.001		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C14	470		BPD-00047	DD-471	BYA07447	CCD-471	B-347	10TS-T47
C15	470		BPD-00047	DD-471	BYA07447	CCD-471	B-347	10TS-T47
C16	470		BPD-00047	DD-471	BYA07447	CCD-471	B-347	10TS-T47
C17	.001		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C18	.001		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C19	100	10%	1469-0001	TCZ-100	L10T1	CCD-101	MCB235	MS-31
C20	470		BPD-00047	DD-471	BYA07447	CCD-471	B-347	10TS-T47
C21	470		BPD-00047	DD-471	BYA07447	CCD-471	B-347	10TS-T47
C22	.001		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C23	2.2	10%	NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C24	4.7	10%	NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C25	4.7	10%	NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C26	.001		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C27	.0047		BPD-0047	DD-472	BYA10D47M	CCD-472	B-347	5HK-D47
C28	470		BPD-00047	DD-471	BYA07447	CCD-471	B-347	10TS-T47
C29	.47	10%	DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C30	.1	400V	P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C31	.0047		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C32	.047	200V	P388N-047	DD-503	CUB3S47	3DP-3-473	GEM-4147 3DY-456	3TM-S47
C33	56	3000V	10%					
C34	.0047		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C35	.47	10%	DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C36	4.7	10%	NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C37	.47	10%	DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C38	.0047		BPD-0047	DD-472	BYA10D47M	CCD-472	B-347	5HK-D47
C39	.001		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C40	.0047		BPD-0047	DD-472	BYA10D47M	CCD-472	B-347	5HK-D47
C41	18	10%	DI-18	DD-180	L10Q18	CCD-180	GP418	10TS-Q18
C42	.047	200V	P388N-047	DD-503	CUB3S47	3DP-3-473	GEM-4147	3TM-S47
C43	330	10%	DI-331	DD-331	L10T33	CCD-331	GP333	10TS-T33
C44	.01		BPD-01	DD-103	BYA10S2	CCD-103	B-110	5HK-S01
C45	.0022	400V	P488N-0022	D6-222	CUB6D47	6DP-1-222	GEM-622	6TM-D22
C46	220	N750 10%	N750-DI 220	DTN-220	C10T22C	CCTO-221	CNT-322	10TCU-T22
C47	100	10%	DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C48	.001	400V 10%	V84C5DI-10%	DD-102	P46DI	6DP-1-102	GEM-1621	6TM-D10
C49	.001	400V 10%	V84C5DI-10%	DD-102	P46DI	6DP-1-102	GEM-1621	6TM-D10
C50	.001	400V 10%	V84C5DI-10%	DD-102	P46DI	6DP-1-102	GEM-1621	6TM-D10
C51	.0047	200V 10%	V84C3D47-10%		P46D47	6DP-1-473	GEM-16347	6TM-D47
C52	.0056		DI-5600	DD-562	DPM56D56	CCD-562	B-256	10TS-D56
C53	.1	200V	P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C54	.0033	400V 10%	V84C5D33-10%		P46D33	CCD-332	GEM-1623	6TM-D33
C55	220	10%	DI-220	DD-221	L10T22	6DP-3-473	GP322	10TS-T33
C56	.047	600V	P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C57	.039	400V 10%	P634CM-039		DPM6S339	6DP-3-393	GEM-1614	6PS-S39
C58	.01	600V	P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10
C59	.022	600V	P688N-022	DD-303	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C60	.01	1600V	P684CM-01	D6K-103	CUB6K1	16DP-5-103	GEM-1611	MS-D1
C61	.22	200V	P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C62	.0039	400V	P488CM-0039	DD-392	DPM5D392	6DP-1-392	GEM-624	6PS-D39
C63	.0047	200V	P288N-0047	D6-472	CUB6D47	6DP-1-473	GEM-6247	6TM-D47
C64	.047	200V	P388N-047	DD-503	CUB3S47	4DP-3-473	GEM-4147	3TM-S47
C65	.0039	10%	1469-0039		1B3D39	CM-3DB-392K	MCM2.5-3	MS-S39
C66	100	10%	1469-0001	TCZ-100	22S5T1	CM-19B-181K	MCB235	MS-31
C67	470	10%	1469-00047		5RS7S7	CM-19B-471K	MCF344	MS-347
C68	330	10%	1469-00033		5RS733	CM-19B-331K	MCB341	MS-33
C69	220	N750 10%	N750-DI 220	DTN-220	C10T22C	CCTN-221	CNT-322	10TCU-T22
C70	.1	400V	P488N-1	DF-104	CUB4P10	4DP-3-104	GEM-401	4TM-P10
C71	.1	600V	P688N-1	DF-104	CUB6P1	6DP-3-104	GEM-601	6TM-P10
C72	.068	400V 10%	V84C4S68-10%		P46S68	4DP-3-683		4TM-S68

FIXED CAPACITORS (cont)

ITEM No	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C73	.039 400V 10%		P634CM-039		DPM6S339	6DP-3-393	GEM-1614	6PS-S39
C74	47 4000V 10%						6DY-447	
C75	.0047		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C76	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

CONTROLS

ITEM No	RATING RESISTANCE	WATTS	REPLACEMENT DATA: HOFFMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS - IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	300Ω	½	800076	B-3		B11-103		Contrast
B	Shaft			Not Req.		SKI		
R2A	150K	½	800079	B-43	A47-150K-S	QI1-538	RU154L *	Brightness
B	Shaft			Not Req.	FS-3	Not Req.	SL3500 *	
R3A	1.5meg	½	800088	B-743	A47-1.5meg-S	QI1-136	U155	Vert. Hold
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4A	4meg	½	803069	F1-83		†QI-1356 *	UE4308	Focus
B	750Ω			R3-4				AM Reject (Buzz)
R5A	15K	½	800094	AB-30	A47-15K-S	B11-118	TA153L	Horiz. Drive
B	Shaft			AE-4	FS3-1/2	T144	Not Req.	
R6A	50K	½	800096	B-33	A47-50K-Z	QI1-123	U33	TV Sound Level
B	Shaft			Not Req.	FS3-1/4	Not Req.	Not Req.	
R7A	100K	½	800038	T7-40	B47-100K-S	B11-126	PTA11L	AGC
B	Shaft			Not Req.	Not Req.	T145	Not Req.	
R8A	1meg	½	800039	T7-69	B47-1meg-S	B11-137	PTA125L	Height
B	Shaft			Not Req.	Not Req.	T146	Not Req.	
R9A	1meg	½	800039	T7-69	B47-1meg-S	B11-137	PTA125L	Vert. Linearity
B	Shaft			Not Req.	Not Req.	T146	Not Req.	

* Use Bushing SL-38.
† "CONCENTRIKIT" Equivalent: K-5 Kit with Base Elements and Shafts: B11-240, F9-021 (Panel) (Not available as a factory assembled unit). B11-105, R15-005 (Rear)
■ "STA-LOC" Equivalent: FA46L, RU751L, G8625, IK825.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R10	47K			
R11	2.7meg			
R12	470K			
R13	470Ω			
R14	22K			
R15	2200Ω			
R16	47Ω			
R17	470Ω			
R18	2200Ω			
R19	47Ω			
R20	15K			
R21	1000Ω			
R22	22K			
R23	150Ω			
R24	33K			
R25	4700Ω			
R26	10K			
R27	4700Ω 4W	PW5-4700	4G-4700	
R28	39K			
R29	22K 2W			
R30	470K			
R31	1000Ω 1W			
R32	15K			
R33	220K			
R34	22K			
R35	47K			
R36	39K			
R37	13K			(5600Ω) *
R38	820K			
R39	100K			
R40	560K			
R41	10K			
R42	330Ω			
R43	22K			
R44	1000Ω 1W			
R45	3300Ω 1W			
R46	27K			
R47	330K			
R48	2.2meg			
R49	120K			
R50	2200Ω 1W			
R51	2200Ω 1W			
R52	2200Ω 1W			
R53	1800Ω 1W			
R54	470Ω			
R55	220K			
R56	68K 1W			
R57	1000Ω 5%			
R58	220K			
R59	680K			
R60	680K 1W			
R61	27K 1W			
R63	1.5meg			
R63	33K			
R64	1.5meg			
R65	100Ω			
R66	47K 1W			
R67	1000Ω			
R68	220Ω			
R69	220Ω			
R70	3Ω (Cold)			
R71	100K			
R73	100K			
R73	220K			
R74	470K			
R75	6800Ω			
R76	1500Ω 5%			
R77	100K			
R78	120K			
R79	100Ω			
R80	1meg			
R81	100Ω			
R82	10K 2W			
R83	15K			
R84	4700Ω			
R85	2.2Ω			
R86	820K			
R87	10000Ω 1W			
R88	1.5meg			
R89	1meg			
R90	1200Ω 10W	PW10-2500	10W-SQ-2500	
R91	120Ω 15W	PW15-120	15W-SQ-120	
R92	330K			
R93	47K			

* Alternate Value

COILS (RF-IF)

ITEM No	USE	REPLACEMENT DATA: HOFFMAN PART No.	Merit PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	RF Choke (27uh)	750004	TV-192	4696	RTC-8524	① IRC Part #CL-A.
L2A	1st Video IF	763031	TV-134	6232	RTC-8553	T235
B	47.25MC Trap					
L3	2nd Video IF	763207	TV-130	6229	RTC-8551	T227
L4A	3rd Video IF	763032		6222	RTC-8553	T235
B	47.25MC Trap					
L5	4th Video IF	760019	TV-126	6234	RTC-8563	T211
L6	RF Choke (6.8uh)	760004 ①	BC-565	4610	RTC-8530	T859
L7	Peaking (100uh)	771008	TV-181	6113	RTC-8574	T305
L8	Peaking (820uh)	771019	TV-207	6156	RTC-8588	T238
L9	4.5MC Trap	763206	TV-151	1469	RTC-8802	T249
L10	Peaking (220uh)	771013	TV-197	6154	RTC-8586	T312
L11	1st Sound IF	763205	TV-151	1469	RTC-8802	T249
L12	2nd Sound IF	760003	TV-113	6203	RTC-8545	T235
L13	Quadrature	774001	TV-121	1480	RTC-8605	T281
L14	RF Choke (1.5uh)	750015 ①	BC-563	4604	RTC-8516	T856

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: HOFFMAN PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.	NOTES
L15	Horiz. Stabilizer	768020	TV-163	6211	RTC-8622	HS-5	WLC-25	T103	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: HOFFMAN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V ② 1.9A	580VCT ③ .280A DC	④ 3A	716020-1 ①				R-80BC ②	① Alternate Part #76020 ② Phase and parallel 5A & 5A (6.3V) windings.
	SEC. 3	SEC. 4	SEC. 5						
	6.3V ③ .5A	6.3V ④ 2.5A							

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: HOFFMAN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Output	T28010-2					
T3	Alt. Output	T28010					
	Yoke (Horiz. 18MH)	T90014		DY-27A ①②		Y-48 ①②	Y-60-1 ①③
	110° (Vert. 15MH)						
	Rear Cover and Centering Device						
T4	Horiz. Output	T82012					

① Remove horizontal damping network.
② Use original rear cover and centering device.
③ Remove 470Ω Resistor across vertical winding.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	HOFFMAN PART No.	REPLACEMENT DATA
K1	Vert. Integrator	.0022mfd, .0047mfd, .0047mfd, 820Ω, 820Ω, 22K	988001	Aerovox PA-110 Centralab PC-100 Mallory MS-400 Sprague V-1/V-3

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M1	VHF Tuner Ass'y	710032	Includes Tuner (#714027), Fine Tune Shaft & Gear (714026) STANDARD COIL REPLACEMENT #GG-4230-A
	VHF Tuner	714027	Less Shaft (Fine Tune) & Gear
	UHF Tuner Ass'y	436023	UHF Conversion (Includes UHF Tuner #713012 & Switch 714001)
	UHF Tuner	713013	
	UHF Switch	714001	UHF Adaptor
M2	Switch	903043	Horizontal Size
M3	Circuit Breaker	903043	
M4	Foil		Horizontal Linearity Sleeve

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

DESCRIPTION	PART NO.	MODEL W9003	M9003	SP9003
Mask-TV	406019	X	X	X
Glass-Dial, Tuner	619040	X	X	X
Screen-Channel Indicator-TV	620005	X	X	X
Screen-Function Indicator	62005	X	X	X
Dial-Channel Indicator-TV	399003	X	X	X
Dial-Function Indicator	399004	X	X	X
Knob-VHF Channel Selector	480072	X	X	X
Knob-Fine Tuning	508023	X		
Knob-Fine Tuning	408023		X	X

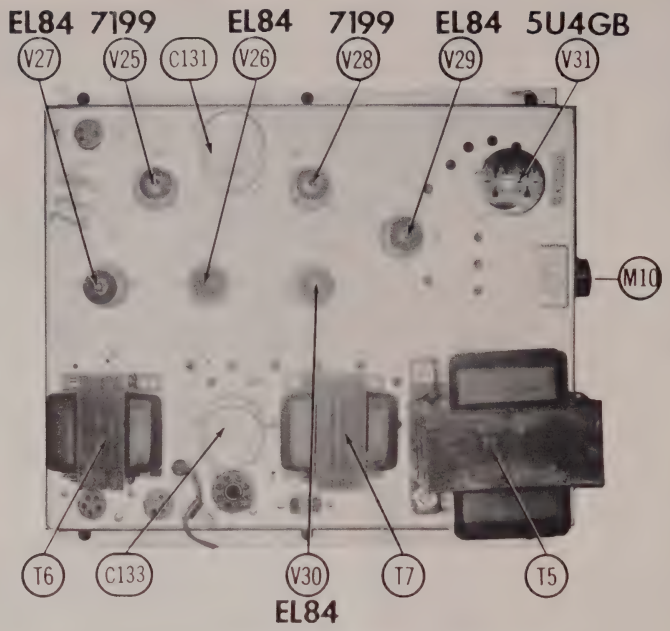
DESCRIPTION	PART NO.	MODEL W9003	M9003	SP9003
Knob-Contrast, Brightness, Vert. Hold	508021	X	X	X
Knob-Function Selector (Preamp.)	480072	X	X	X
Knob-Loudness, Bass, Treble, Balance	508024	X	X	X
Knob-FM AM Tuning	500066	X	X	X
Knob-Function Selector Tuner), AFC	500067	X	X	X
Cabinet-Walnut	356001	X		
Cabinet-Mahogany	356002		X	
Cabinet-Maple	356003			X

WIRING DATA

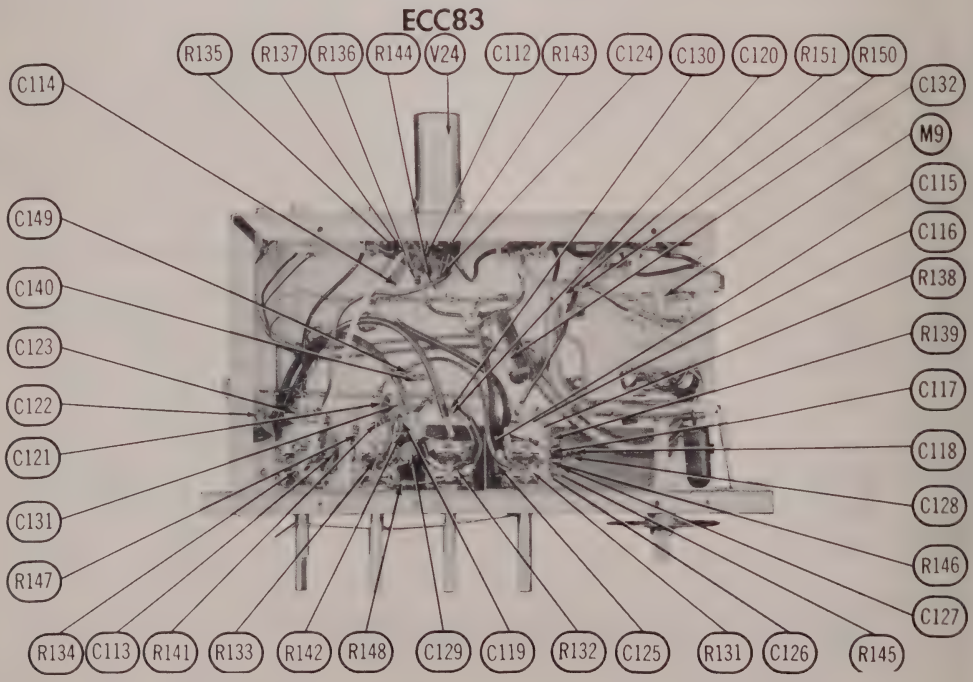
High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8805 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8676
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 8 Conductor

HOFFMAN MODELS M9003, SP9003, W9003 (Ch. 427)

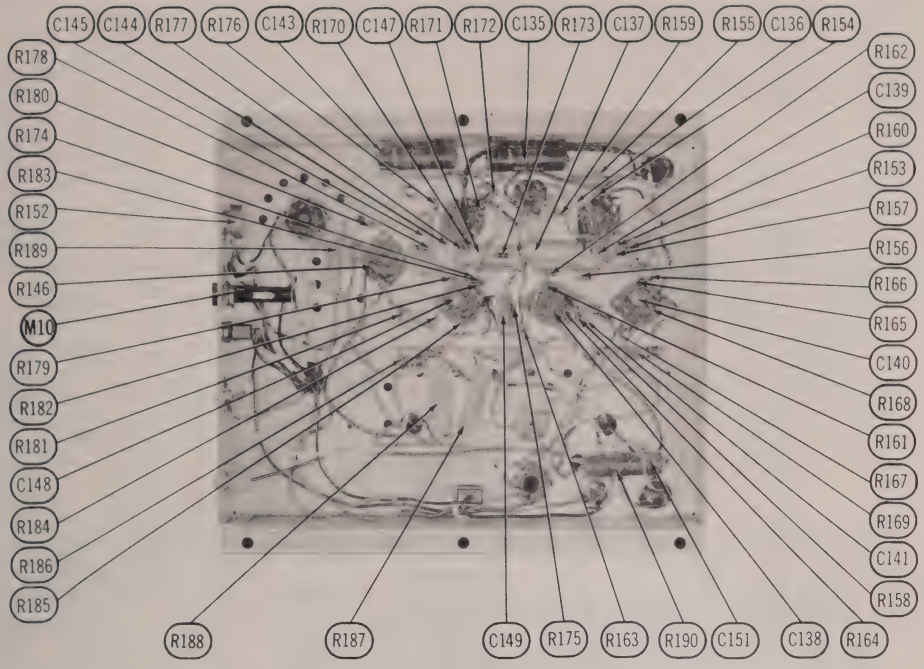
FOLDER 2



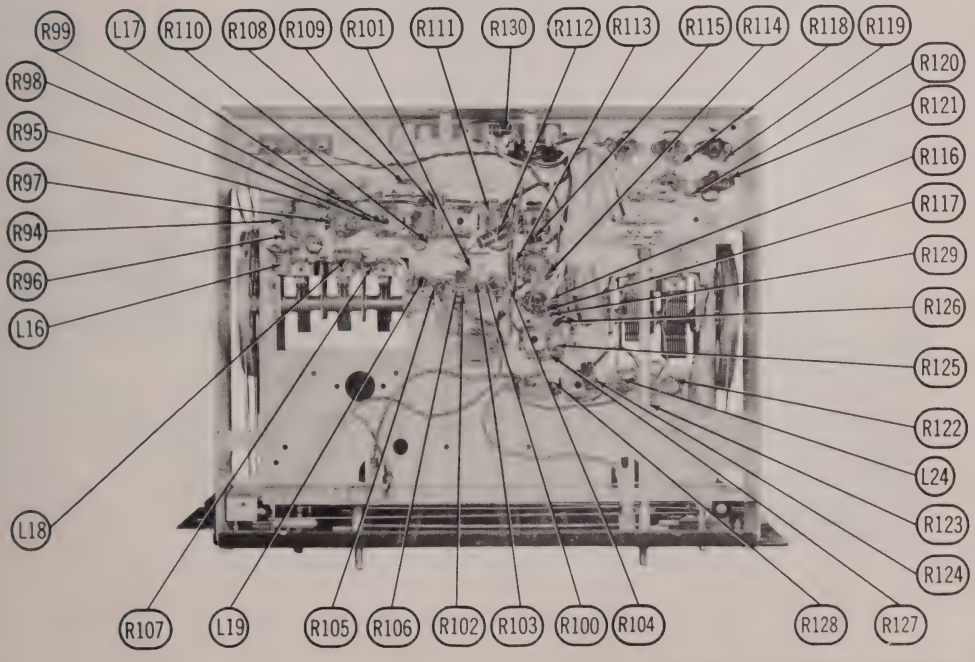
POWER AMP CHASSIS - TOP VIEW



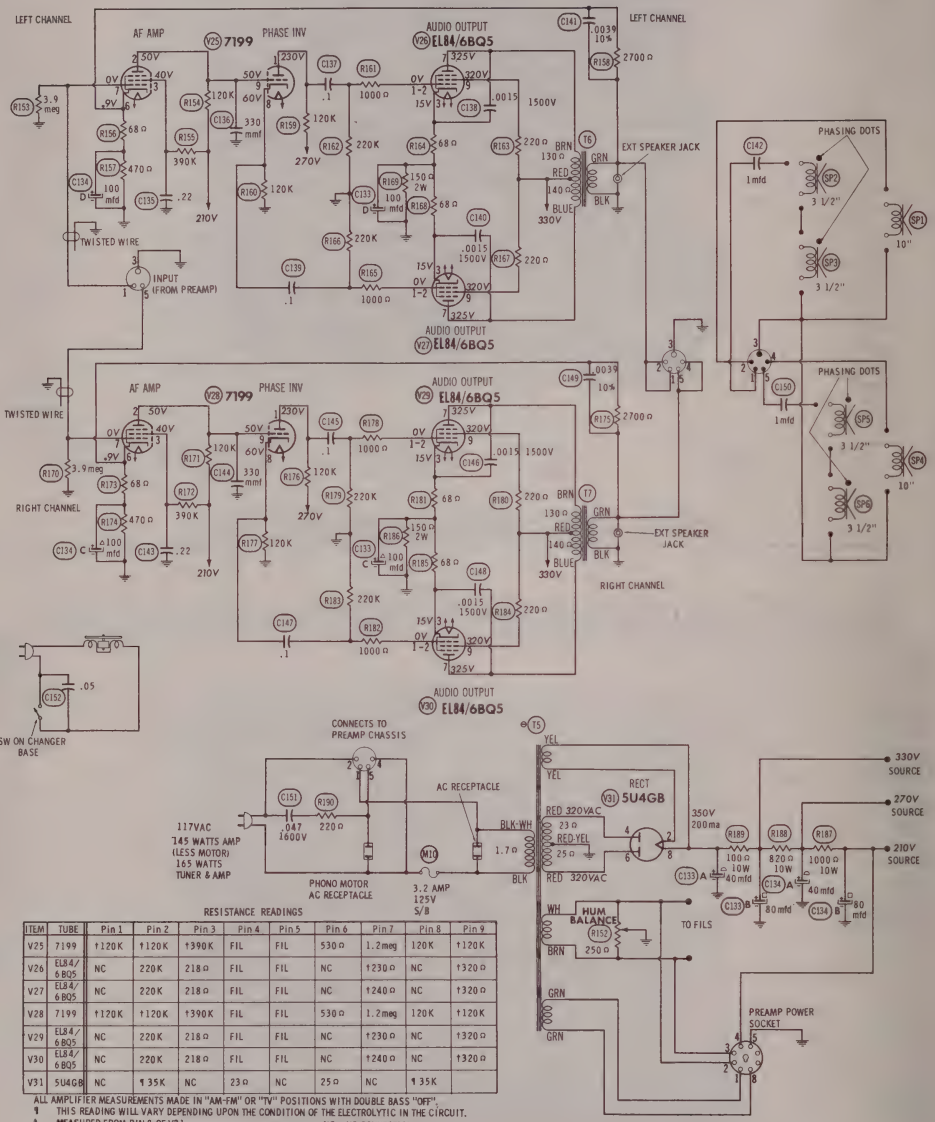
PREAMP CHASSIS



POWER AMP CHASSIS - BOTTOM VIEW



FM-AM TUNER BOTTOM VIEW - RESISTOR, INDUCTOR IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V25	7199	†120K	†120K	†390K	FIL	FIL	530Ω	1.2meg	120K	†120K
V26	EL84/6BQ5	NC	220K	218Ω	FIL	FIL	NC	†230Ω	NC	†320Ω
V27	EL84/6BQ5	NC	220K	218Ω	FIL	FIL	NC	†240Ω	NC	†320Ω
V28	7199	†120K	†120K	†390K	FIL	FIL	530Ω	1.2meg	120K	†120K
V29	EL84/6BQ5	NC	220K	218Ω	FIL	FIL	NC	†230Ω	NC	†320Ω
V30	EL84/6BQ5	NC	220K	218Ω	FIL	FIL	NC	†240Ω	NC	†320Ω
V31	5U4GB	NC	¶35K	NC	23Ω	NC	25Ω	NC	¶35K	

ALL AMPLIFIER MEASUREMENTS MADE IN "AM-FM" OR "TV" POSITIONS WITH DOUBLE BASS "OFF".
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V31. NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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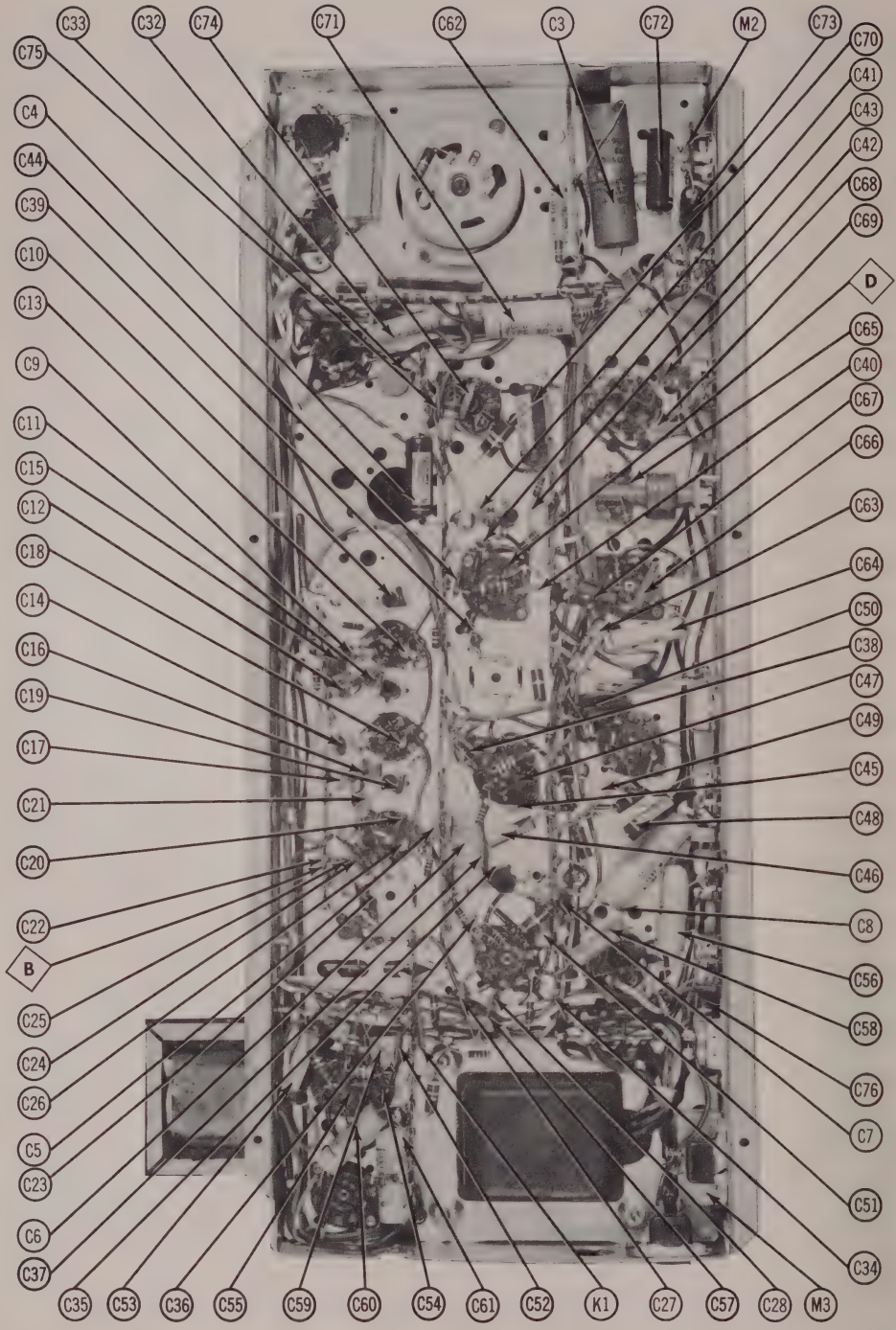
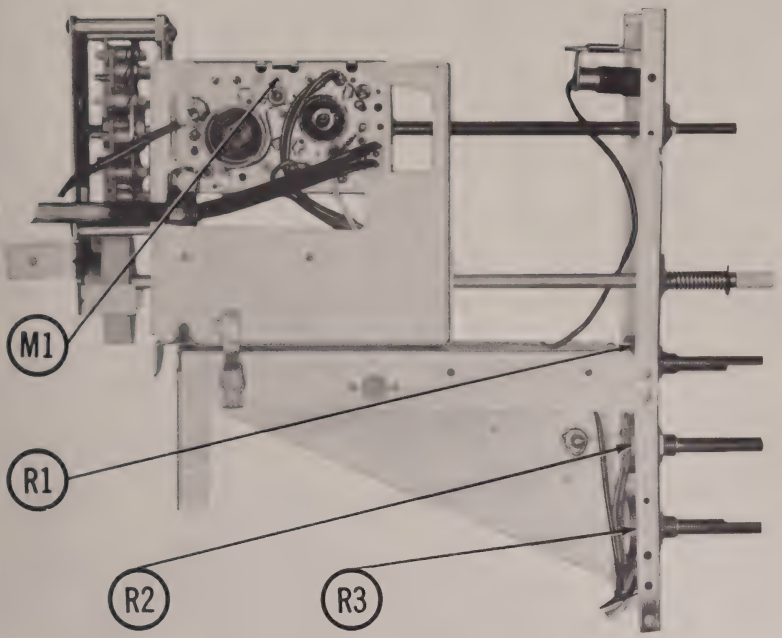
POWER AMP CHASSIS 1148

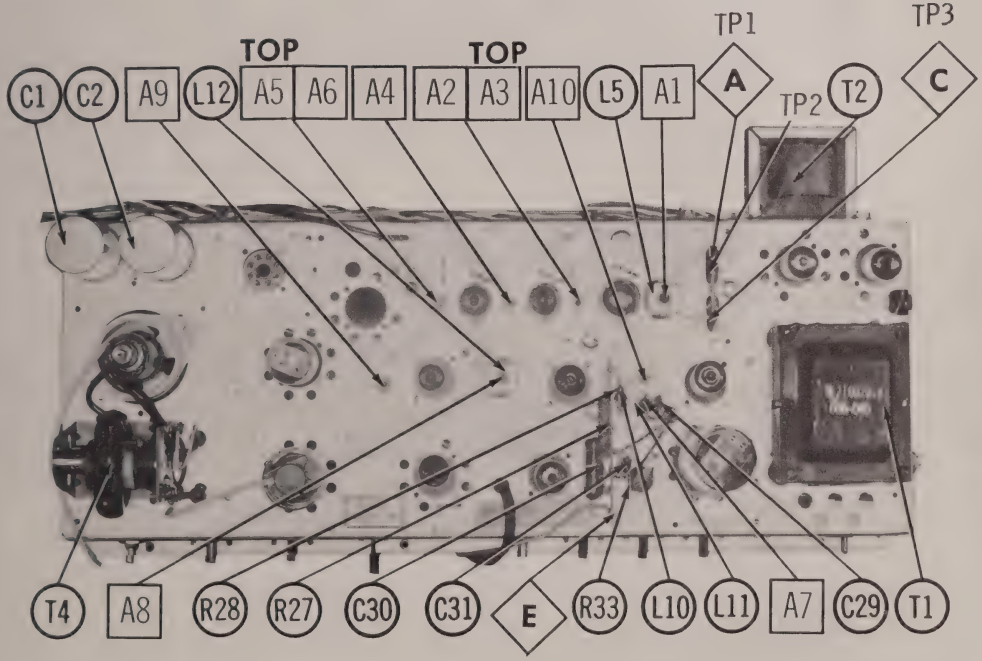


TV CHASSIS BOTTOM VIEW - ALIGN., CAPACITOR, MISC. IDENT.



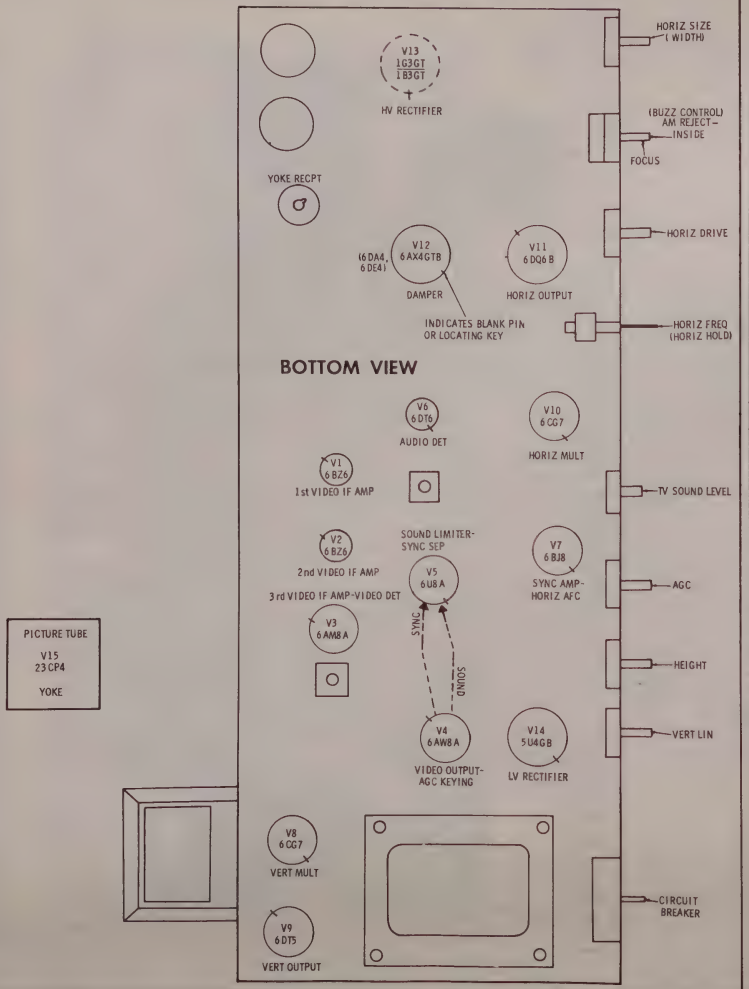
TEST POINTS

TP1 -1.2V (IF AGC)
TP2 -1V (VIDEO DET OUTPUT GRID)
TP3 3.5V (AUDIO DET CATHODE)



TV CHASSIS & CONTROL PANEL - TOP VIEW

TV TUBE PLACEMENT CHART

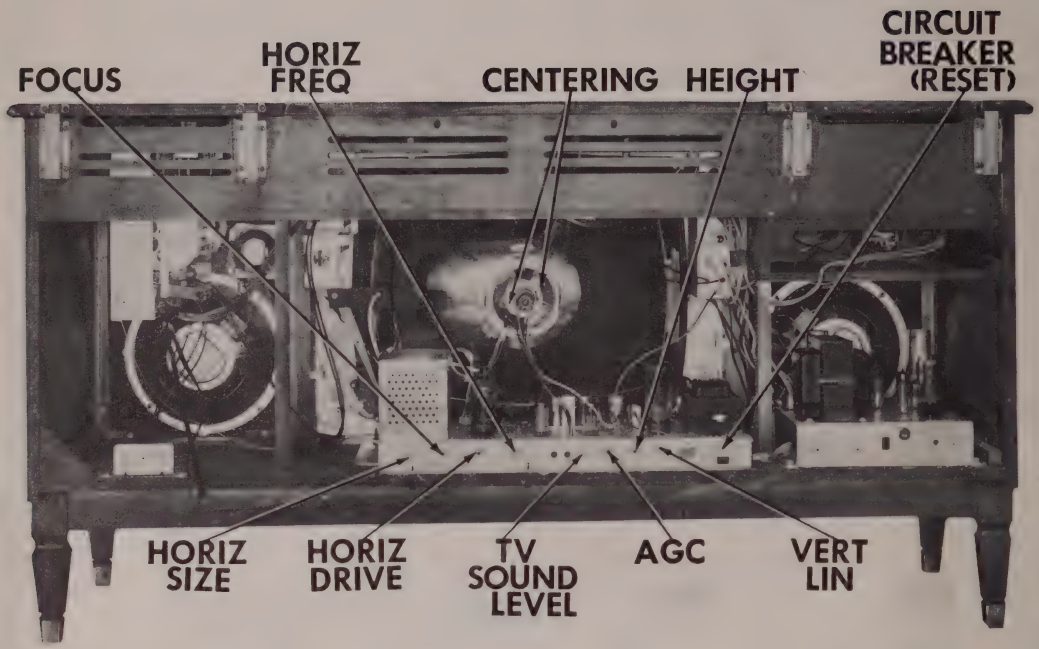


RESISTANCE MEASUREMENTS TV

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	•100K	47Ω	FIL	FIL	†4800Ω	†4800Ω	0Ω		
V2	6BZ6	•100K	47Ω	FIL	FIL	†4800Ω	†4800Ω	0Ω		
V3	6AM8A	150Ω	.1Ω	†24K	FIL	FIL	†1100Ω	.1Ω	4700Ω	0Ω
V4	6AW8A	†120Ω	†1100Ω	•550K	FIL	FIL	•80Ω	4700Ω	†22K	†5800Ω
V5	6U8A	†120K	47K	†30K	FIL	FIL	†30K	0Ω	0Ω	2.5meg
V6	6DT6	6Ω	•800Ω	FIL	FIL	†870K	†6000Ω	560K		
V7	6BJ8	15K	320K	15K	FIL	FIL	320K	†4500Ω	†120K	4500Ω
V8	6CG7	†68K	260K	1000Ω	FIL	FIL	†550K	•3meg	1000Ω	0Ω
V9	6DT5	†2100Ω	NC	•2.5meg	FIL	FIL	NC	0Ω	NC	†420Ω
V10	6CG7	†8000Ω	700K	1500Ω	FIL	FIL	†120K	100K	1500Ω	0Ω
V11	6DQ6B	NC	FIL	NC	†10K	1meg	TP	FIL	0Ω	TOP CAP †17Ω
V12	6AX4GTB	NC	NC	¶3meg	NC	†120Ω	NC	FIL	FIL	
V13	1G3GT / 1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP 375Ω
V14	5U4GB	NC	¶	NC	20Ω	NC	22Ω	TP	¶	
V15	23CP4	FIL	22K	†47K	•†1.3meg	NC	NC	•300K	FIL	
V201	6CY5	•1meg	0Ω	FIL	FIL	†3600Ω	†12K	0Ω		
V202	6CG8A	15K	†13K	0Ω	FIL	FIL	†5800Ω	†50K	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM PIN 8 OF V14.
† MEASURED FROM PIN 3 OF V12.

NC NO CONNECTION
TP TIE POINT



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set Brightness and Contrast for a normal picture.

Turn the Horizontal Hold (Freq. Slug) clockwise until the picture loses sync. It may be necessary to switch off channel and back again for the picture to lose sync.

Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by a Horizontal Size Switch. (For location, see "Tube Placement Chart".)

Turn to an unused channel. If vertical lines appear near the center of the screen, slowly adjust the Horizontal Drive Control (R5) until the white lines disappear.

If the Horizontal Drive was adjusted, tune in a TV station and readjust the Horizontal Hold as above.

Adjust the Width (Horizontal Size Switch) for a picture SLIGHTLY wider than necessary to fill the picture mask horizontally.

HORIZONTAL LINEARITY

A Foil patch is taped to the neck of the picture tube and positioned for desired horizontal linearity.

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive Control. (For location, see "Tube Placement Chart".)

DISASSEMBLY INSTRUCTIONS

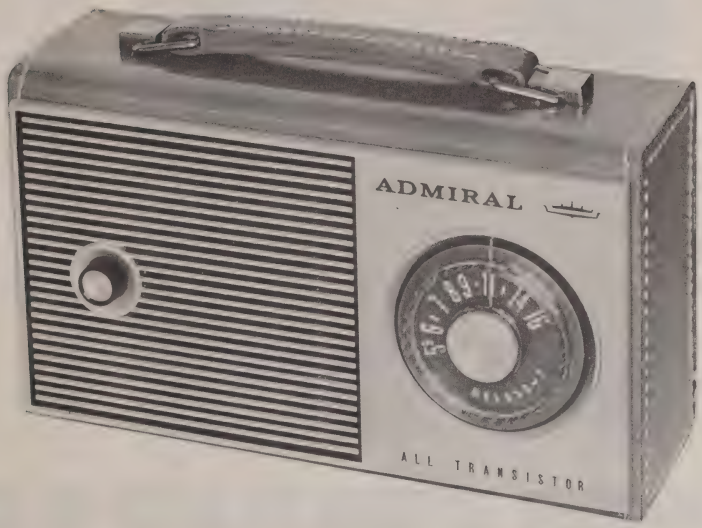
TV CHASSIS & PICTURE TUBE ASSEMBLY REMOVAL

1. Disconnect antenna leads.
2. Remove rear cover (15 screws).
3. Disconnect all necessary leads and plugs from FM-AM Tuner, Preamp., Power Amp., and Phono.
4. Remove 4 TV chassis bolts.
5. Loosen 4 screws (inside cabinet, 1 on each side and 2 at top) holding front mask assembly.
6. Remove chassis and Picture Tube assembly out front.

PHOTOFACT® Folder with CIRCUITRACE®

ADMIRAL MODEL Y2119 (Ch. 7D2)

ADMIRAL MODEL Y2119 (Ch. 7D2)



ADMIRAL MODEL Y2119 (Ch. 7D2)

TRADE NAME	Admiral Model Y2119 (Ch. 7D2)
MANUFACTURER	Admiral Sales Corp., Service Div., 903 Morrissey Drive, P. O. Box 845, Bloomington, Illinois
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC
RATING	8MA @ 9 Volts DC (No Signal, Min. Volume)
	20MA @ 9 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	535 – 1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1620KC	"	"	A5	"
3.	"	1400KC	1400KC Signal.	"	A6	Adjust for maximum output. Repeat Steps 2 and 3.

DISASSEMBLY

1. Remove 2 knobs.
2. Remove 2 chassis mounting screws from bottom of cabinet. (Not used in some versions)
3. Open rear cover (unsnap). Remove battery holder and disconnect leads.
4. Remove 2 nuts from right corners of chassis.
5. Hold front escutcheon and slide chassis to right. Remove chassis. (Left side of chassis is held by 2 flanges on escutcheon)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KF612

SET 543 FOLDER 3

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N411	Converter	2N411	2N486	2N411	PNP
X2	2N410	1st IF Amplifier	2N410	2N483	2N410	PNP
X3	2N410	2nd IF Amplifier	2N410	2N483	2N410	PNP
X4	2N406	AF Amplifier	2N406	2N362	2N406	PNP
X5	2N406	Driver	2N406	2N362	2N406	PNP
X6	2N406	Output	2N406	2N362	2N406	PNP) Matched
X7	2N406	Output	2N406	2N362	2N406	PNP) Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	25	3	67B32-13	BCD3025	ECPB411	PET130	MLV25-3	VL-1041	
C2	10	3	67B35-6	PTT-3010	NLW10-3	TT3X10	MLV10-3	TE-1053	
C3	100	12	67B32-6	BCD12100	ECPB417	PET1500	MLV100-12	VL-1140	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.47 3V			UK-474				HY-130
C5	10000 50V		BPD-01	DD-103	H-05S1	CCD-103	TA-110	TG-S10
C6	3.6 NPO 5%	#65D10-190						10TCC-V39
C7	50000 10V		BPD-05	UK10-503	H-05S5		TA-150	TG-S50
C8	50000 10V		BPD-05	UK10-503	H-05S5		TA-150	TG-S50
C9	3.6 NPO 5%	#65D10-190						10TCC-V39
C10	50000 10V		BPD-05	UK10-503	H-05S5		TA-150	TG-S50
C11	50000 10V		BPD-05	UK10-503	H-05S5		TA-150	TG-S50
C12	10000 50V		BPD-01	DD-103	H-05S1	CCD-103	TA-110	TG-S10
C13	10000 50V		BPD-01	DD-103	H-05S1	CCD-103	TA-110	TG-S10
C14	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C15	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20

Admiral Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	2500Ω	1/4	75B36-4					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	2200Ω				R14	1000Ω			
R3	8200Ω				R15	5600Ω			
R4	39K				R16	2200Ω			
R5	3900Ω				R17	39K			
R6	75K 5%				R18	27K			
R7	5600Ω				R19	270Ω			
R8	3900Ω				R20	27K			
R9	68K				R21	220Ω			
R10	560Ω				R22	10Ω			
R11	2200Ω				R23	10Ω			
R12	16K 5%				R24	100Ω			
R13	2700Ω								

(CONTINUED ON REAR PAGE)

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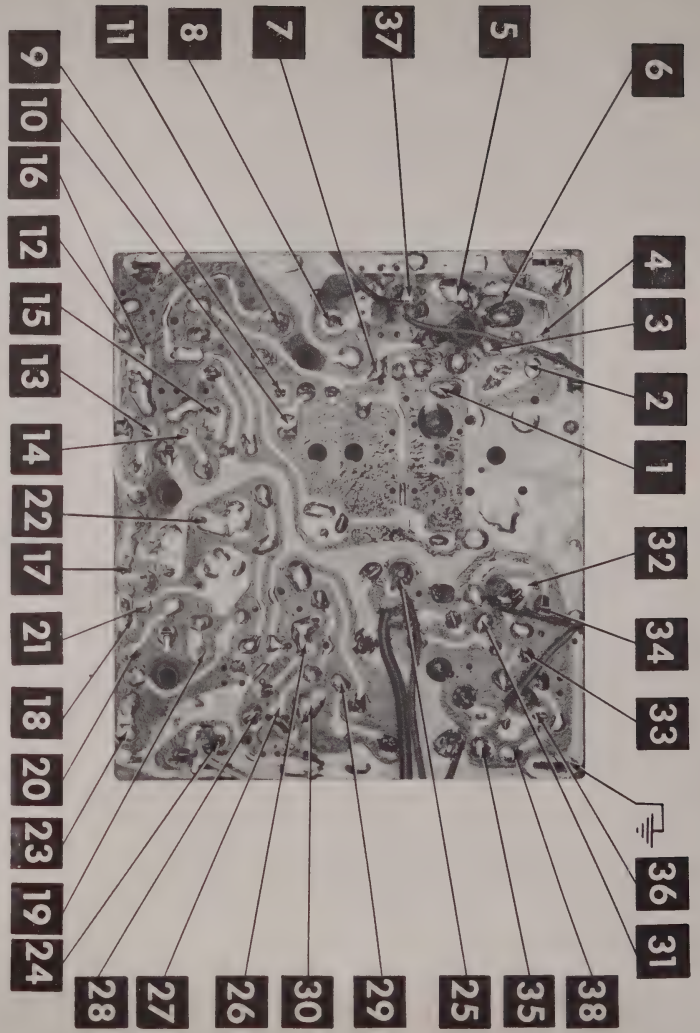
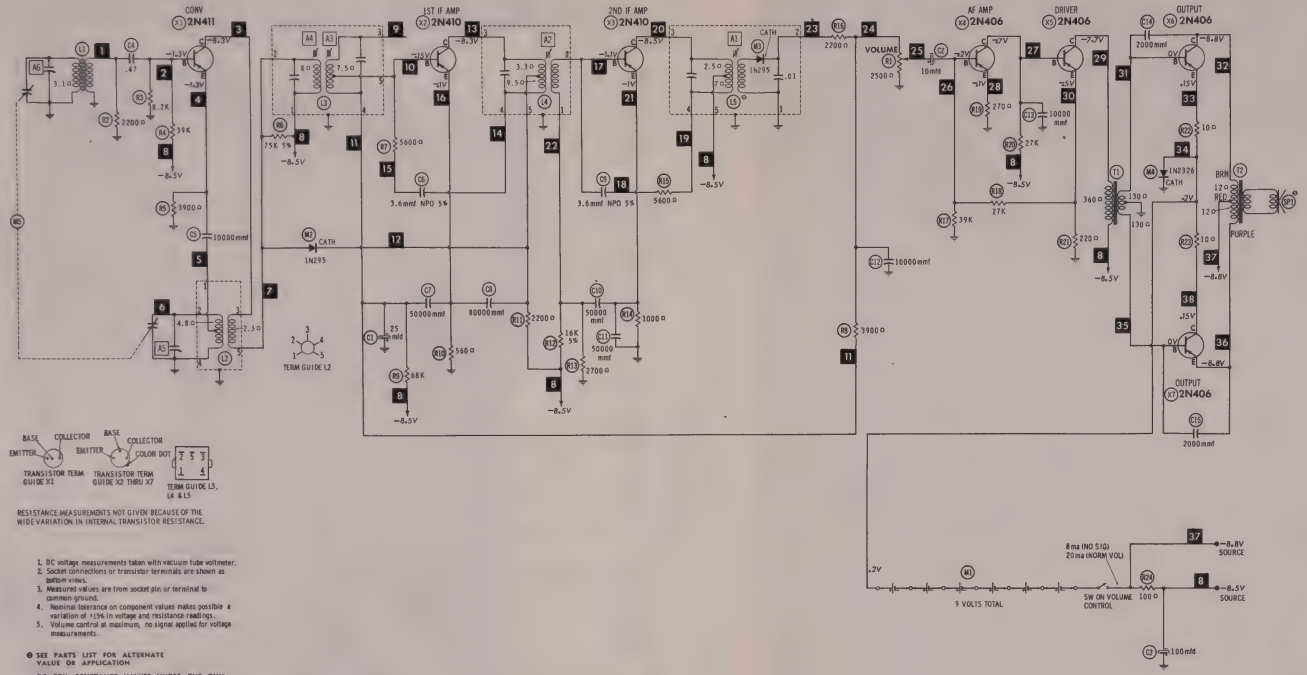
PRINTED BOARD





RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
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ADMIRAL MODEL Y2119 (Ch. 7D2)

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ADMIRAL PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick	69B235-3	BC-419	705-A		T532	
L2	Oscillator	69B223-4					
L3	1st IF	72C189-3					
L4	2nd IF	72C190-1					
L5	3rd IF	72C190-10 ①					① Includes M3

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	ADMIRAL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	79B76-3					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	ADMIRAL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	800Ω CT	3-4Ω	79D33-22					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ADMIRAL PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	78C156-2 *	4A1	* Includes T2

BATTERIES

ITEM No.	VOLTAGE	ADMIRAL PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V			130		635		M-14R	6 Required

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		ADMIRAL PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N295	57C1-2		1N295	1N295	Overload (Pigtail)
M3	1N295	57C1-54		1N295	1N295	Detector (Part of L5)
M4	1N2326	57C1-29				Output Bias Regulator

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M5	Tuning Cap.	68C77-13	2 Gang (Ant. 13-272mmf, Osc. 12-102mmf)

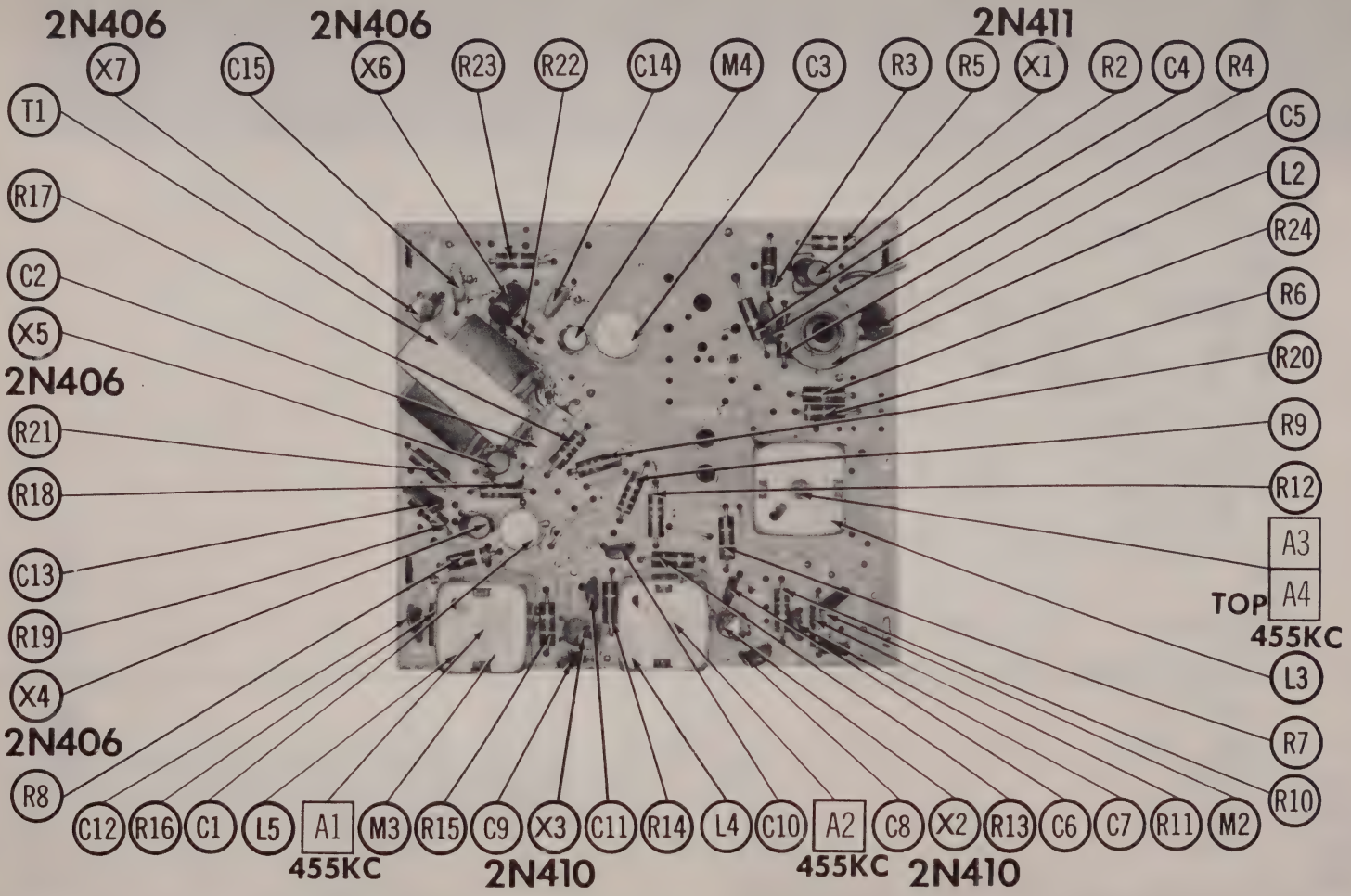
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	33C418-1	Tuning
Knob	33C402-3	Volume
Cabinet	34D140-1	Gray

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors



CHASSIS TOP VIEW

PHOTOFACT® Folder

AMC MODEL E5T

AMC MODEL E5T

AMC MODEL E5T

TRADE NAME	AMC Model E5T
SUPPLIER	Associated Merchandising Corp., 1440 Broadway, New York 18, N. Y.
TYPE SET	AC-DC Operated 5 Tube AM Receiver
POWER SUPPLY	110 — 120 Volts AC-DC
TUNING RANGE—BROADCAST	540 — 1600KC RATING 26 Watts, .25 Amp. @117 Volts AC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	455KC (400% Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1600KC	1600KC	"	A5	"
3.	Loop	1400KC	1400KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KG613

SET 543 FOLDER 4

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	12BE6	V4	Output	50C5
V2	IF Amplifier	12BA6	V5	Rectifier	35W4
V3	Det.-AVC-AF Amp.	12AV6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	AMC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	50	150		PRS2200	BBRD5315	TCD497	TDLD-8	TVA-2450	
B	30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C3	.01 400V		P488N-01	D6-103	CUB4Si	4DP-1-103	GEM-411	4TM-S10
C4	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C5	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AMC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K	½	E2518	B-60-S	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On

RESISTORS

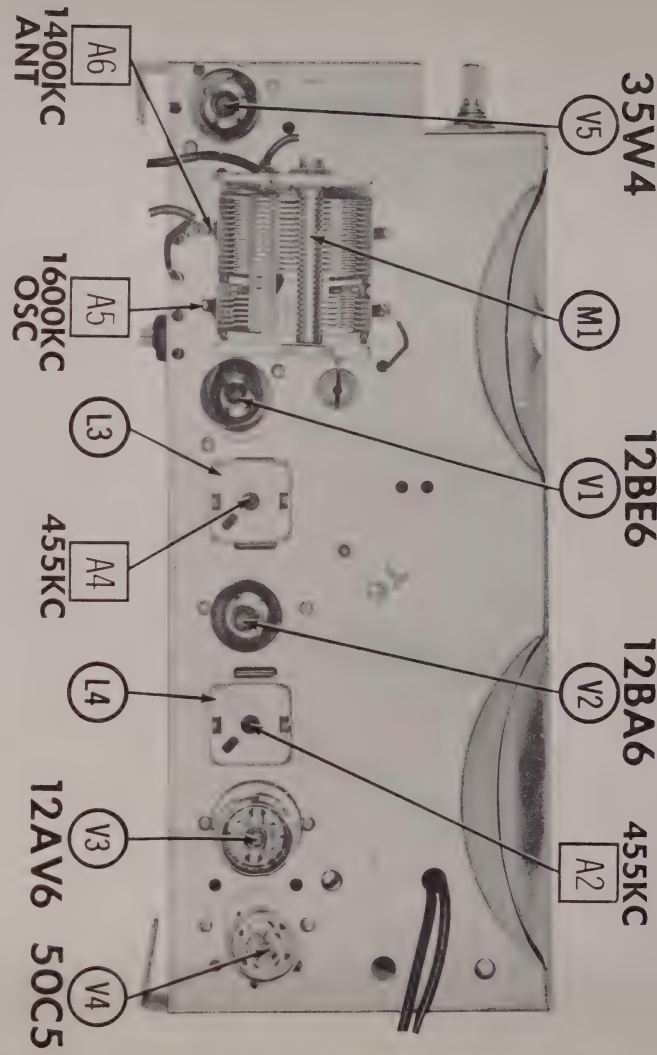
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	22K				R5	150Ω			
R3	3.3meg				R6	1500Ω 1W			
R4	150Ω								

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AMC PART No.	REPLACEMENT DATA
K1	Audio Coupling	220mmf, 250mmf, 2000mmf, 5000mmf, 470K, 470K, 6.8meg		Aerovox PA-113-1 Centralab PC-150 Mallory MS-106 Sprague DT-1

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		AMC PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loop Ant.						
L2	Osc.		BC-393	69-OSC	RTC-8646	T504	
L3	Input IF		BC-352	12-C1	RTC-8632	T607	
L4	Output IF		BC-353	12-C2	RTC-8633	T608	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AMC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1500Ω	1-2Ω	E1113	A-3025	A-3332	26S58	S-20X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AMC PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	E-1014	4A07	
SP2	4"	PM	3-4Ω	E-1017-B	4A05	

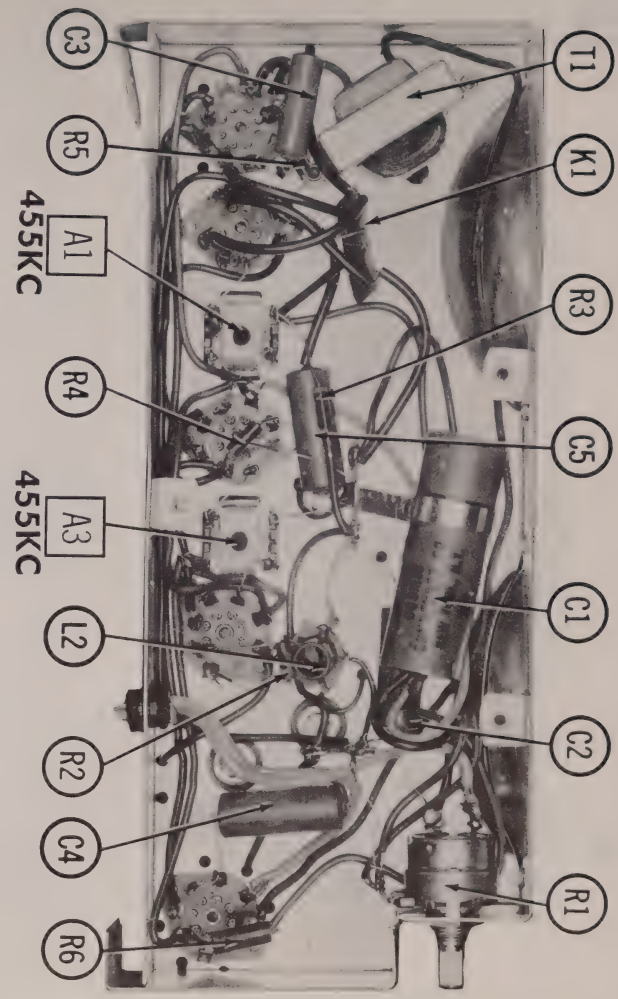
MISCELLANEOUS

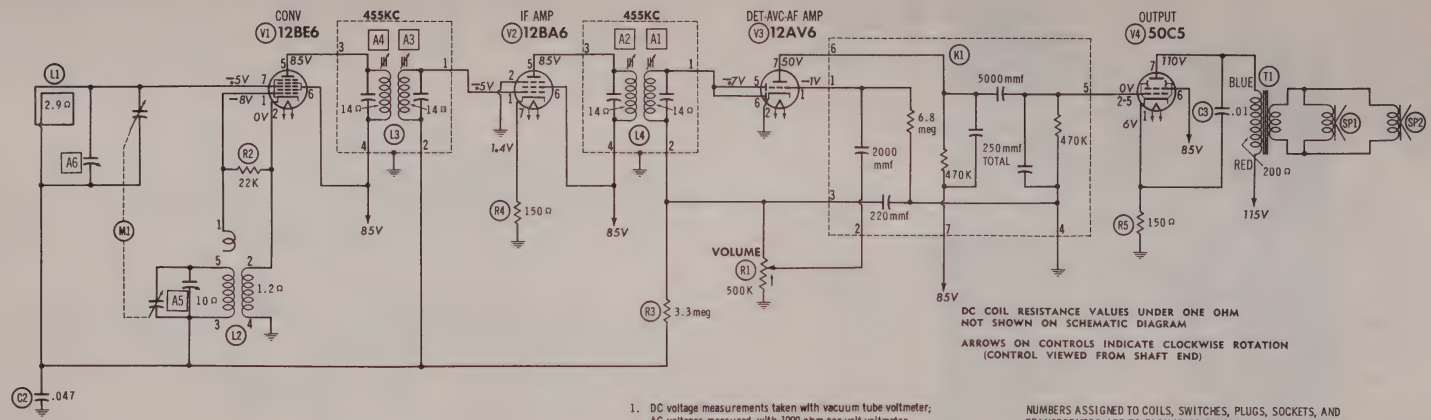
ITEM No.	PART NAME	AMC PART No.	NOTES
M1	Tuning Cap.		2 Gang (Ant. 30-390mmf, Osc. 20-125mmf)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW





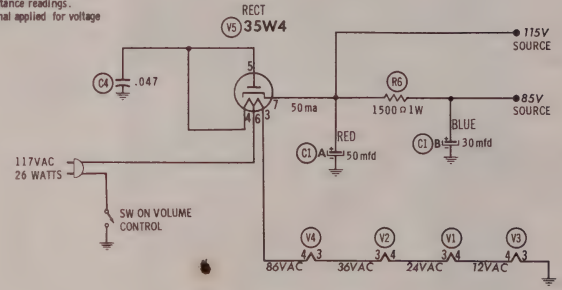
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	1.2Ω	20Ω	10Ω	†1500Ω	†1500Ω	3.8meg
V2	12BA6	3.8meg	0Ω	30Ω	20Ω	†1500Ω	†1500Ω	150Ω
V3	12AV6	6.8meg	0Ω	0Ω	10Ω	500K	500K	†470K
V4	50C5	150Ω	470K	30Ω	80Ω	NC	†1500Ω	†200Ω
V5	35W4	NC	TP	80Ω	115Ω	115Ω	110Ω	¶ INF

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5. NC NO CONNECTION TP TIE POINT



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AMC MODEL
E5T

PHOTOFACT® Folder

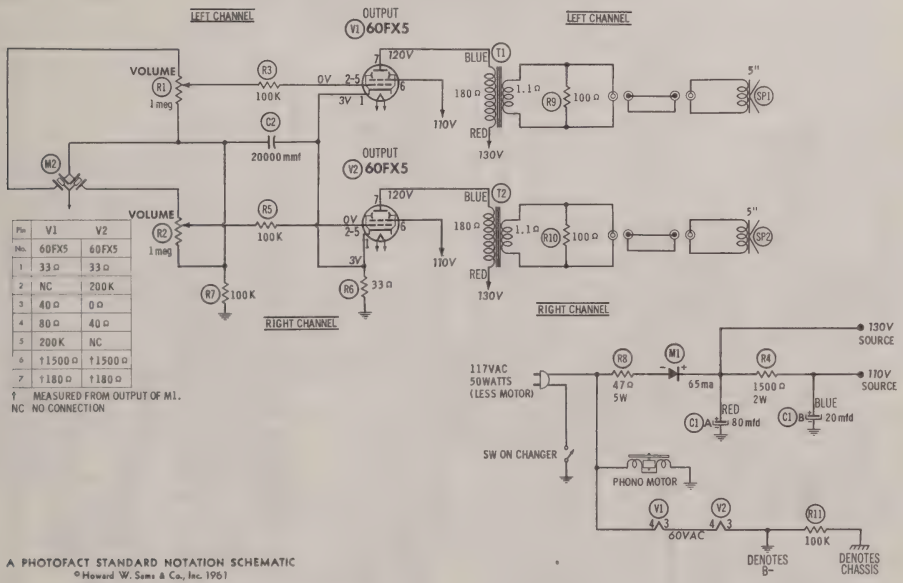
ARVIN MODEL 80P78
(Ch. 1.62001)

ARVIN MODEL 80P78
(Ch. 1.62001)

TRADE NAME	Arvin Model 80P78 (Ch. 1.62001)
MANUFACTURER	Arvin Industries, Inc., Columbus, Indiana
TYPE SET	AC Operated 2 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 50 Watts, .48 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER – SEE SIMILAR MONARCH UA12 – PHOTOFACT SET 465 FOLDER 6

ARVIN MODEL 80P78
(Ch. 1.62001)



Pin No.	V1 60FX5	V2 60FX5
1	33Ω	33Ω
2	NC	200K
3	40Ω	0Ω
4	80Ω	40Ω
5	200K	NC
6	†1500Ω	†1500Ω
7	†180Ω	†180Ω

† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION

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HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KT624

SET 543 FOLDER 5

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left Channel Output	60FX5	V2	Right Channel Output	60FX5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ARVIN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	80	150	44772-13	PRS2220	BBRD8415	TCT3117	TDLD-10	TVA-2460	
B	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ARVIN PART No.*	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg	½	47500-6	B-70	A47-1meg-2	Q13-137	U53	Volume, Left Channel
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	1meg	½	47500-6	B-70	A47-1meg-2	Q13-137	U53	Volume, Right Channel
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	100K				R8	47Ω 5W	PW5-47Ω	5W-SQ-47	
R4	1500Ω 2W				R9	100Ω			
R5	100K				R10	100Ω			
R6	33Ω				R11	100K			
R7	100K								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	ARVIN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2600Ω	6-8Ω	46200-8	A-2903①	A-3849①	22S86①	S-62X	① Drill new mounting holes.
T2	2600Ω	6-8Ω	46200-8	A-2903①	A-3849①	22S86①	S-62X	

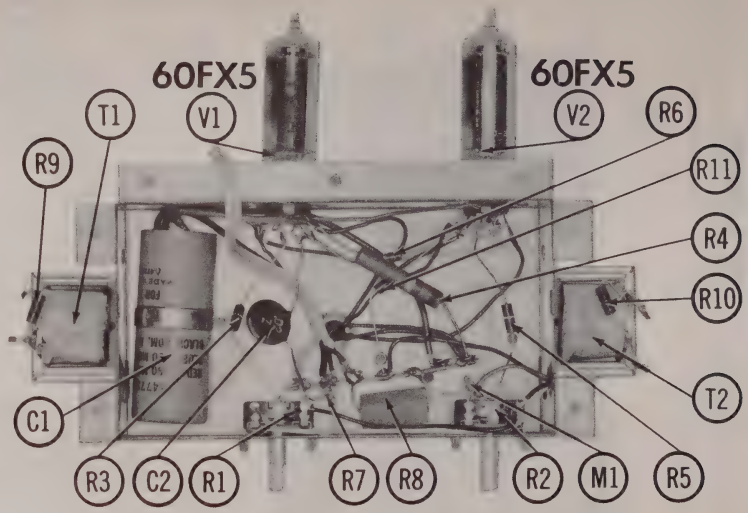
SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ARVIN PART No.	QUAM PART No.	
SP1	5"	PM	6-8Ω	45599-10	5A07Z6.4	
SP2	5"	PM	6-8Ω	45599-10	5A07Z6.4	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	ARVIN PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.065A	47126-1	1N1763	2F4	SR200	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	ARVIN PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M2	46507-11	Not Req.	76TS	N8-7* & N8-3*	96T	Not Req.	12TH-S	Not Req.	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	48966-29	Volume
Cabinet	48941-8	Brown
Cabinet	48977-8	Left Speaker
Cabinet	48972-8	Right Speaker

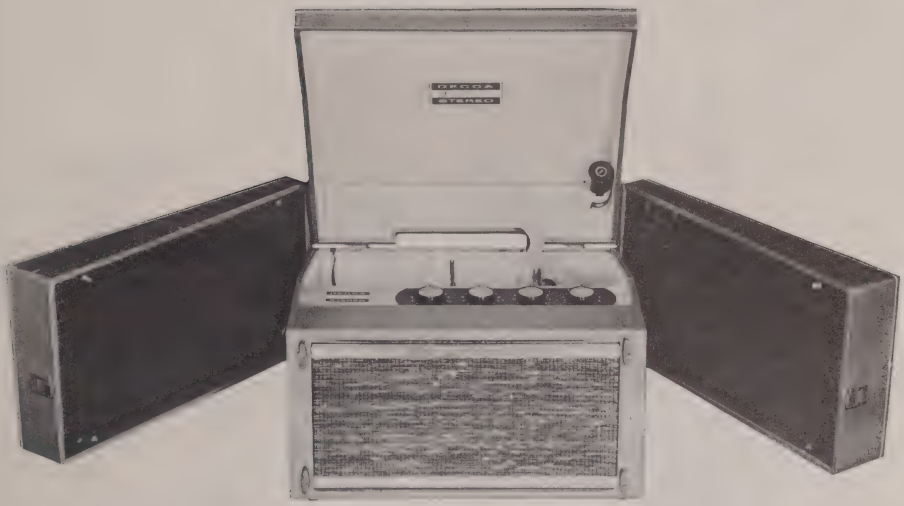
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

**DECCA MODEL
DP-297**

DECCA MODEL
DP-297



DECCA MODEL
DP-297

TRADE NAME	Decca Model DP-297
MANUFACTURER	Decca Distributing Corp., 445 Park Ave., New York 22, N. Y.
TYPE SET	AC Operated 5 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 60 Watts, .57 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER – SEE SIMILAR V-M 1201 – PHOTOFACT SET 436 FOLDER 18
OR RECORD CHANGER MANUAL RC-12

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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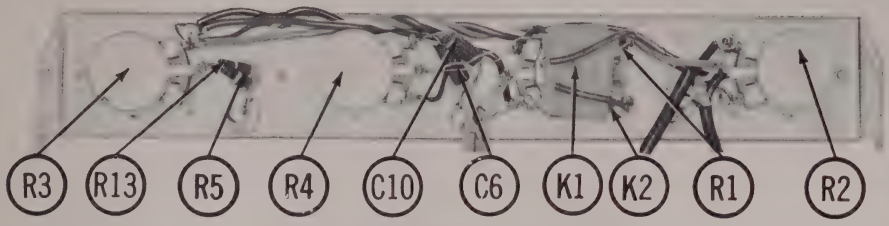
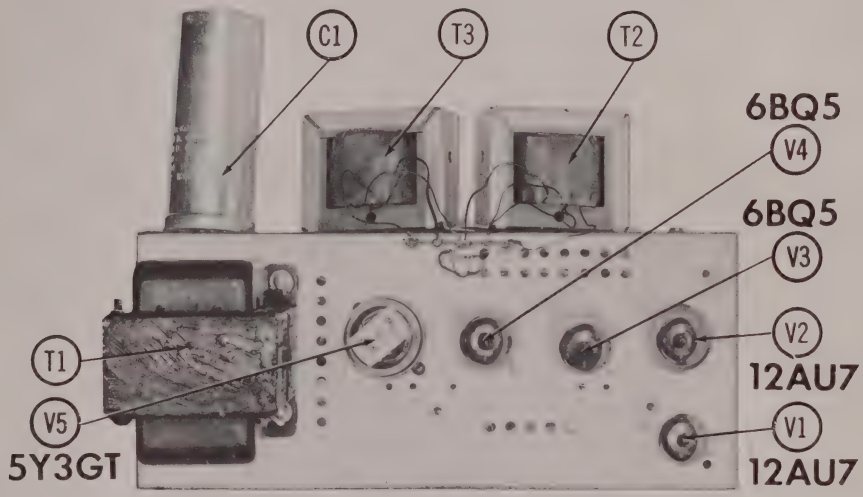
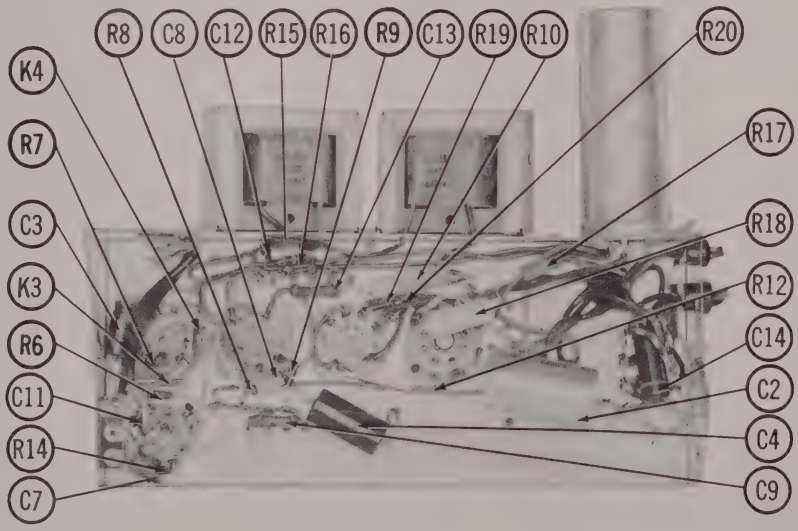


CONTROL PANEL-REAR VIEW



CHASSIS-TOP VIEW



CHASSIS-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	Left Channel AF Amp. - Right Channel AF Amp.	12AU7
V2	Left Channel AF Amp. - Right Channel AF Amp.	12AU7
V3	Left Channel Output	6BQ5 (EL84) *
V4	Right Channel Output	6BQ5 (EL84) *
V5	Rectifier	5Y3GT

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA DECCA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	450		AFH3-44	C0350	FP377.1	TMT-3748	TVL-3787	
B	40	450							
C	40	250							
C2	40	250		PRS1580	BR4025	TC58	TD-40-250	TVA-1511	
C3	25	25		PRS1260	BBR25-25	TC26	TD-25-25	TVA-1205	
C4	100	25		PRS1270	BBR100-25	TC2501	TD-100-25	TVA-1207	
C5	100	25NP		PRS7340	BR10015	TCN425		TVANS-1207.1*	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	680		SI 680	D6-681	BYA10T68	CCD-681	B-368	10TS-T68
C7	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8	220		SI 220	D6-221	L10T22	CCD-221	B-322	10TS-T22
C9	3000		SI 3000	D6-302	BYA10D3	CCD-302	GP230	10TS-D30
C10	680		SI 680	D6-681	BYA10T68	CCD-681	B-368	10TS-T68
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C12	220		SI 220	D6-221	L10T22	CCD-221	B-322	10TS-T22
C13	3000		SI 3000	D6-302	BYA10D3	CCD-302	B-230	10TS-D30
C14	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DECCA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3.25meg*		368037					Volume, Left Channel
B	3.25meg*							Volume, Right Channel
R2A	3.25meg		368085				FA36R	Balance, Left Channel
B	3.25meg						RU36A	Balance, Right Channel
C	Shaft						CS3500	
R3A	5meg		368036	B-88	AD47-5meg-S		FA56A	Bass, Left Channel
B	5meg			SR-88	Not Req.		RU56A	Bass, Right Channel
C	Shaft			Not Req.	KSS-3		CS3500	
R4A	250K		368035	B-50	AD47-250K-S		FA254L	Treble, Left Channel
B	250K			SR-50	Not Req.		RU254L	Treble, Right Channel
C	Shaft			Not Req.	KSS-3		CS3500	

* Taps ⓐ 1meg and 2meg.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R5	100K			
R6	6.8meg			
R7	1000Ω			
R8	180K			
R9	100K			
R10	125Ω 5W	PW5-125	5W-SQ-125	
R11	22Ω			
R12	10K			
R13	100K			
R14	6.8meg			

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R15	180K			
R16	100K			
R17	2200Ω 1W			
R18	125Ω 5W	PW5-125	5W-SQ-125	

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R19	68Ω			
R20	68Ω			
R21	22Ω			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	DECCA PART No.	REPLACEMENT DATA
K1	Tone Comp.	50mmf, 100mmf, (2) 2500mmf, (2) 100K	420038	
K2	Tone Comp.	50mmf, 100mmf, (2) 2500mmf, (2) 100K	420038	
K3				
K3	Audio Coupling	(2) 15000mmf, (2) 100K, (2) 500K	420037	
K4	Audio Coupling	(2) 15000mmf, (2) 100K, (2) 500K	420037	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA DECCA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117Vⓐ .57A	580VCT ⓐ .090A DC	5Vⓐ 2A	440030					
	SEC. 3	SEC. 4	SEC. 5						
	6.3Vⓐ 2.2A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA DECCA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	6200Ω	3-4Ω CT	430564					
T3	6200Ω	3-4Ω CT	430564					

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA DECCA PART No.	QUAM PART No.	NOTES
SP1	5"	PM	3-4Ω	405005	5A1R	
SP2	8"	PM	3-4Ω	408001	8A21	
SP3	5"	PM	3-4Ω	405005	5A1R	

PHONO CARTRIDGE & NEEDLES

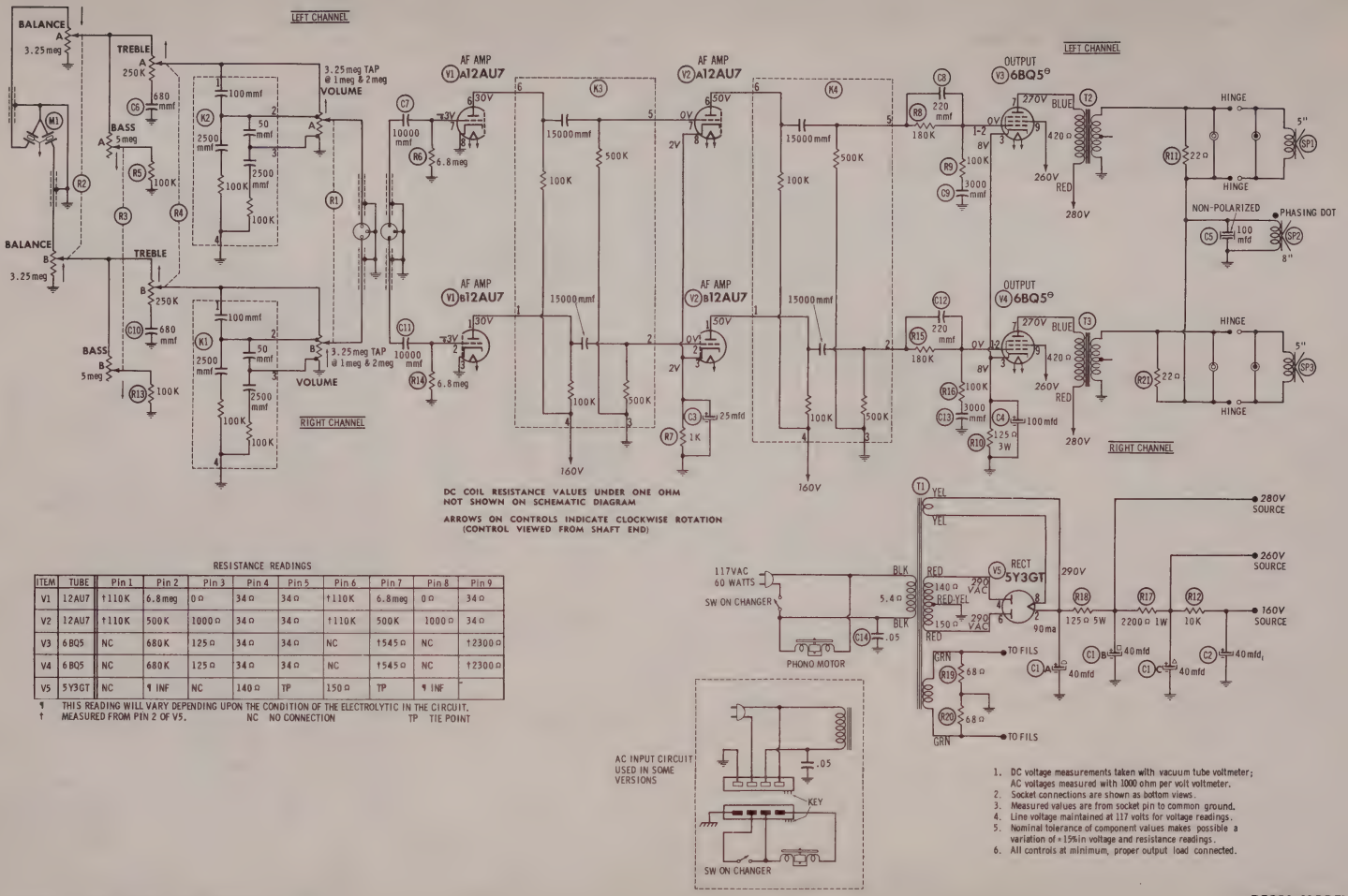
*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	DECCA PART No. CARTRIDGE	DECCA PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M1			13TB	Not Req.	26S	S1-1 * & S3-3*	8TA4-S	N-8TA-S *	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AU7	†110K	6.8meg	0Ω	34Ω	34Ω	†110K	6.8meg	0Ω	34Ω
V2	12AU7	†110K	500K	1000Ω	34Ω	34Ω	†110K	500K	1000Ω	34Ω
V3	6BQ5	NC	680K	125Ω	34Ω	34Ω	NC	†545Ω	NC	†2300Ω
V4	6BQ5	NC	680K	125Ω	34Ω	34Ω	NC	†545Ω	NC	†2300Ω
V5	5Y3GT	NC	¶ INF	NC	140Ω	TP	150Ω	TP	¶ INF	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 2 OF V5. NC NO CONNECTION TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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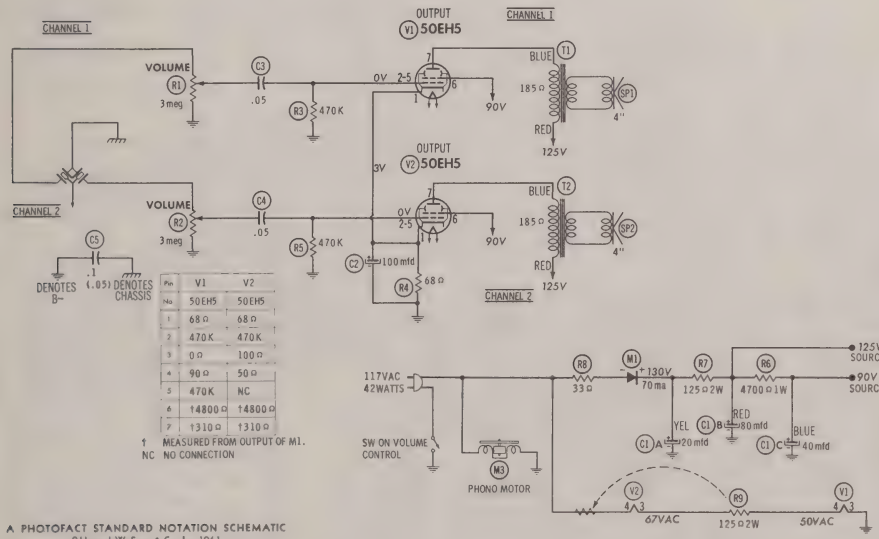
DECCA MODEL DP-297

PHOTOFACT® Folder

**FIRESTONE
MODEL 4-A-213**

FIRESTONE
MODEL 4-A-213

TRADE NAME	Firestone Model 4-A-213 (Code 433-0-1300)
SUPPLIER	Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron 17, Ohio
TYPE SET	AC Operated 2 Tube Stereo Phono Amplifier With 4 Speed Manual Record Player
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 42 Watts, .5 Amp. @117 Volts AC



Pin No	V1 50EH5	V2 50EH5
1	68Ω	68Ω
2	470K	470K
3	0Ω	100Ω
4	90Ω	50Ω
5	470K	NC
6	†4800Ω	†4800Ω
7	†310Ω	†310Ω

† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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FIRESTONE
MODEL 4-A-213

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel 1 Output	50EH5	V2	Channel 2 Output	50EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA FIRESTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	20	150	159-32	PRS3800	BBRT84215	TCT3117	TDLT-7	TVA-3455	
B	80	150							
C	40	150							
C2	100	10		PTT-10100	NLW100-10	TT15X100	MLV100-10	TE-1119.3	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C4	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C5	.1 400V	(05) †	P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10

† Alternate Value

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FIRESTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3meg	½	159-61	B-85	A47-3meg-Z	Q13-140	U57	Volume, Channel 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	3meg	½	159-60	B-85	A47-3meg-Z	Q13-140	U57	Volume, Channel 2
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS	ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	470K				R7	125Ω 2W			
R4	68Ω				R8	33Ω			
R5	470K				R9	125Ω 2W			
R6	4700Ω 1W								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA FIRESTONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	3200Ω	3-4Ω	159-52	A-3025	A-3332	24S53	S-16X①	① Tap 5⅝ Tap
T2	3200Ω	3-4Ω	159-52	A-3025	A-3332	24S53	S-16X①	

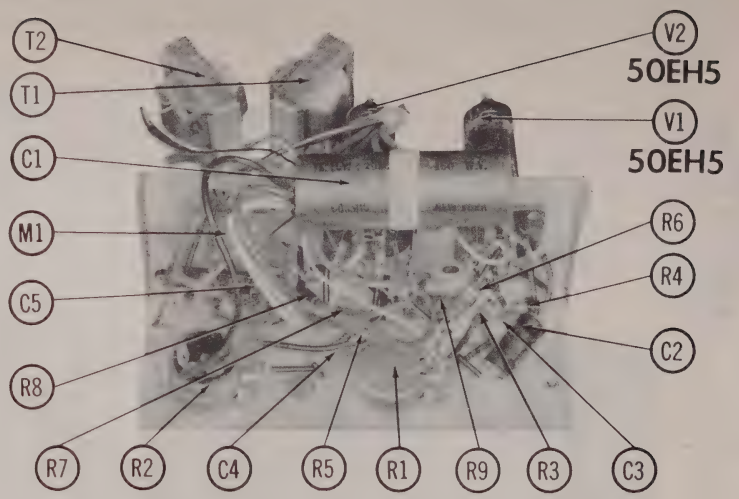
SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA FIRESTONE PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	1100-19	4A07	
SP2	4"	PM	3-4Ω	1100-19	4A07	

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA FIRESTONE PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.070A	159-38 *	1N1763 ♦	100 *	SR200 ♦	* Selenium ♦ Silicon

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA FIRESTONE PART No. CARTRIDGE	FIRESTONE PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M2	M124 1100-14 †		70TS KR-74-TS†	N8-7* & N8-8*	96T	Not Req.	12TH-8 T8C1-12TH-S †	Not Req.	† Includes Tone Arm.

MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M3	Motor Idler Wheel	1100-6	4 Speed (Turntable Drive) WALSCO Part No. 1434

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	1102-6	
Cabinet	1300-19	Speaker Wing
Cabinet	1300-18	Less Speaker Cabinets

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder with CIRCUITRACE®

GLOBE MODEL X-90 (Pocketphone)

GLOBE MODEL X-90 (Pocketphone)

NOTICE

ONLY THOSE PERSONS PROPERLY LICENSED BY FCC ARE PERMITTED TO MAKE CRYSTAL SUBSTITUTION OR EFFECT REPAIRS ON THE TRANSMITTER PORTION OF THIS UNIT.

TRADE NAME	Globe Model X-90 (Pocketphone)		
MANUFACTURER	Globe Electronics, A Div. of Textron Electronics, Inc., Council Bluffs, Iowa		
TYPE SET	Battery Operated Transistorized Portable Citizens Band Transmitter-Receiver		
POWER SUPPLY	9 Volts DC	RATING	15MA @ 9 Volts DC (No Signal, Minimum Volume)
FREQ. RANGE	Any One of Citizens Band Channels 1 thru 22		18MA @ 9 Volts DC (No Signal, Maximum Volume)
			25MA @ 9 Volts DC (Transmit)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A5 .... GENERAL CEMENT #9440
A6 ..... GENERAL CEMENT #8282, 8606, 8606L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

RECEIVER ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .01mfd to base of Receiver Mixer. Low side to foil along board edge.	Frequency of desired operating channel.		Across Voice Coil	A1	Adjust for maximum output, then turn slug clockwise one half turn. Press the push-to-talk switch several times to make sure oscillator starts each time. If it fails to start, turn the adjust further and recheck.
2.	"	"		"	A2, A3, A4	Adjust for maximum output.

TRANSMITTER ALIGNMENT

3. Using an RF Output meter, press push-to-talk switch and adjust A5 for maximum RF output, then turn one half turn clockwise. Press the switch several times to make sure the Oscillator operates. If it fails to start, turn the slug further and recheck. Adjust A6 and A7 for maximum output as indicated on meter. A7 (slug in antenna coil) may not be used.

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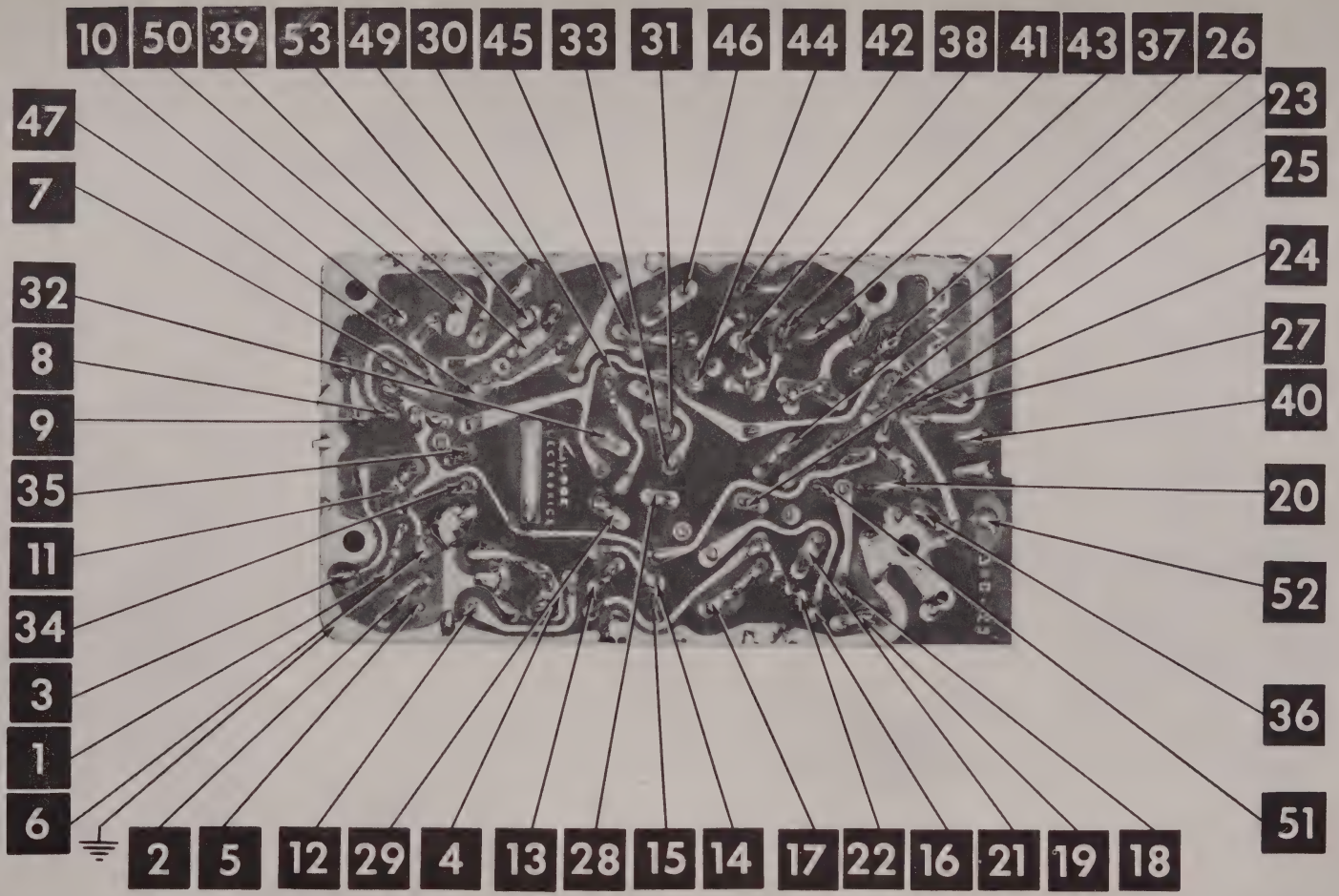
KZ616

SET 543 FOLDER 8



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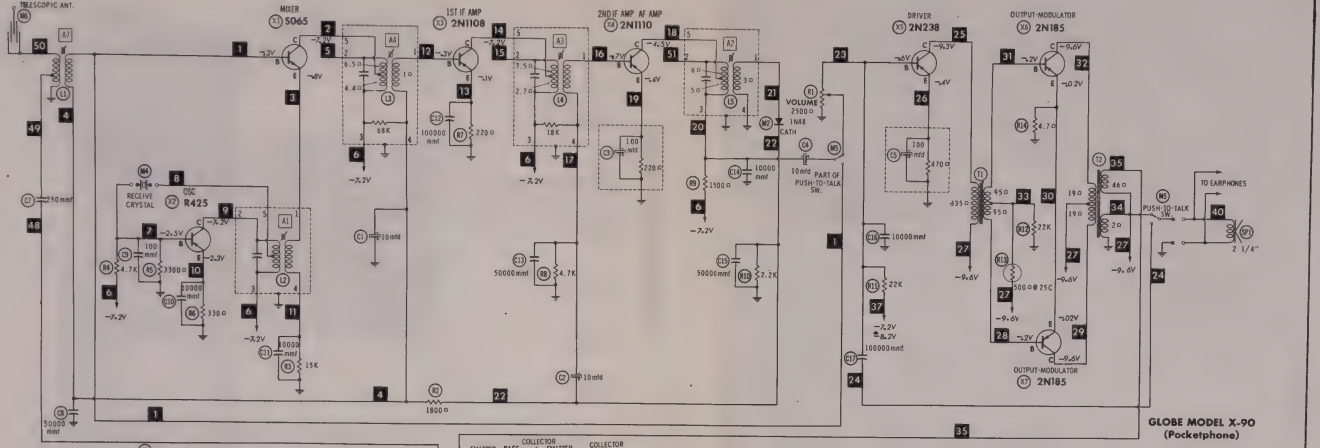
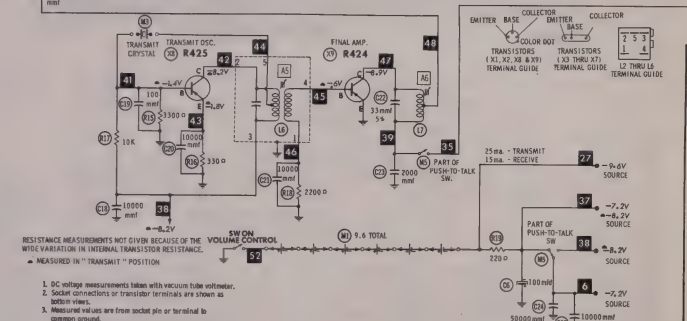
PRINTED BOARD





RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

▲ MEASURED IN "TRANSMIT" POSITION

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of +15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

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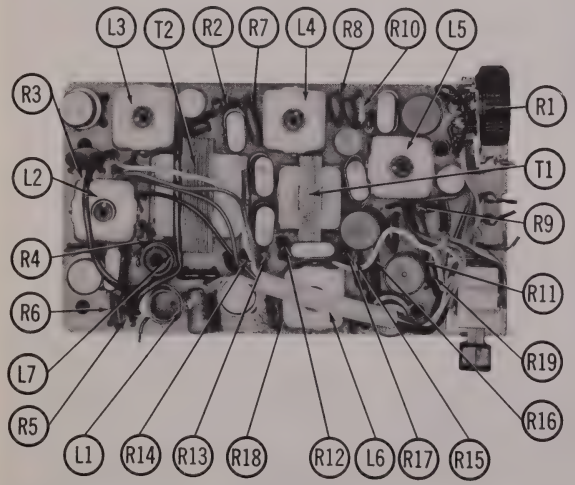


CHASSIS TOP VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	9065	Mixer				PNP
X2	R425	Oscillator				PNP
X3	2N1108	1st IF Amplifier		2N486	2N412	PNP
X4	2N1110	2nd IF Amp. - AF Amp.		2N483	2N409	PNP
X5	2N238 *	Driver	2N407	2N362	2N407	PNP
X6	2N185 *	Output - Modulator	2N407	2N633	2N270	PNP
X7	2N185 *	Output - Modulator	2N407	2N633	2N270	PNP
X8	R425	Trans. Oscillator				PNP
X9	R424	Final Amplifier				PNP

* Supplied as matched kit.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	GLOBE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	10	10	1106-026A	BCDI0010	ECPB408	PETI340	MLV10-10	VL-1127	
C2	10	10	1106-026A	BCDI0010	ECPB408	PETI340	MLV10-10	VL-1127	
C3	100	6	1109-006	BCD6100 †	ECPB117 †	PETI400 †	MLV100-6†	VL-1100 †	
C4	10	10	1106-026A	BCDI0010	ECPB408	PETI340	MLV10-10	VL-1127	
C5	100	6	1109-007	BCD6100 ♦	ECPB117 ♦	PETI400 ♦	MLV100-6♦	VL-1100 ♦	
C6	100	10	1106-027	BCDI0100	ECPB417	PETI400	MLV100-10	VL-1140	

† Connect 220Ω Resistor across Electrolytic. ♦ Connect 470Ω Resistor across Electrolytic.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	250		SI 250	D6-251	L10T25	CCD-251	GP325	10TS-T25
C8	50000 10V		C80V503AM	UK10-503	H-05S5		TA150	TG-S50
C9	100		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C10	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C11	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C12	100000 10V		C80V104AM	UK10-104	H-05P1		TA-010	TG-P10
C13	50000 10V		C80V503AM	UK10-503	H-05S5		TA-150	TG-S50
C14	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C15	50000 10V		C80V503AM	UK10-503	H-05S5		TA-150	TG-S50

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C16	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C17	100000 10V		C80V104AM	UK10-104	H-05P1		TA-010	TG-P10
C18	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C19	100		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C20	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C21	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C22	33 5%		1469-000033	TCZ-33	22R5Q33	CM-19B-330J	CNO-433	MS-433
C23	2000		DI-2000	DD-202	BYA10D2	CCD-202	GP220	5HK-D20
C24	50000		C80V503AM	UK10-503	H-05S5		TA-150	TG-S50
C25	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	GLOBE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	2500Ω	1/10	2300-018	B16-212				Volume and Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	1800Ω				R11	22K			
R3	15K				R12	22K			
R4	4700Ω				R13	500Ω @ 25°C.			
R5	3300Ω				R14	4.7Ω			
R6	330Ω				R15	3300Ω			
R7	220Ω				R16	330Ω			
R8	2200Ω				R17	10K			
R9	1500Ω				R18	2200Ω			
R10	4700Ω				R19	220Ω			

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		GLOBE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Antenna	1400-113					
L2	Oscillator	1205-008					
L3	1st IF	1205-002					
L4	2nd IF	1205-003					
L5	3rd IF	1205-004					
L6	Trans. Oscillator	1205-005					
L7	Final Amp. Plate	1400-114					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	GLOBE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.7	1	1203-012		TA-28			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.1	GLOBE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	700Ω CT	6-8Ω SEC. 2 550Ω	1203-013					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	GLOBE PART No.	QUAM PART No.	
SP1	2 1/4"	PM	6-8Ω	4002-004	22A06Z8	

BATTERIES

ITEM No.	VOLTAGE	GLOBE PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9.6V	1902-025 *		CD-4L *					* 8 Required (Nickel Cadium)

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		GLOBE PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N48	3700-058		1N295	1N295	Detector (Pigtail)

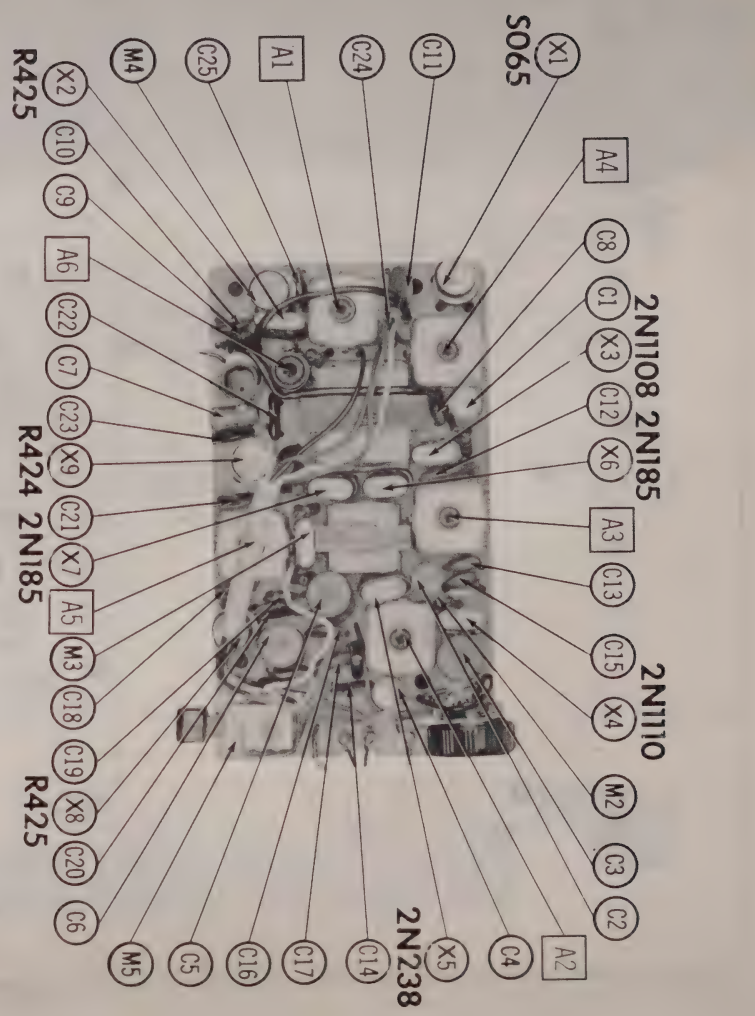
MISCELLANEOUS

ITEM No.	PART NAME	GLOBE PART No.	NOTES
M3	Crystal		Transmit (Specify Channel & Frequency Desired)
M4	Crystal		Receive (Specify Channel & Frequency Desired)
M5	Switch	2102-004	Push to talk (Spring Return, Pushbutton Type)
M6	Antenna	4003-001	Whip
	Earphone	4000-009	(15Ω)

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder

GRUNDIG MAJESTIC MODEL 5199WE

GRUNDIG MAJESTIC
MODEL 5199WE

GRUNDIG MAJESTIC
MODEL 5199WE

TRADE NAME	Grundig Majestic Model 5199WE			
IMPORTER	Majestic International Sales, 743 N. LaSalle Street, Chicago 10, Illinois			
TYPE SET	AC Operated 10 Tube FM-BC-SW-LW Receiver			
POWER SUPPLY	110-125/ 220-240 Volts AC, 60 Cycles	RATING	86 Watts, .8 A @ 117 Volts AC	
TUNING RANGE—BROADCAST	510-1620KC		SHORT WAVE I	3.15—8.8MC
FREQ. MOD.	88-108MC		SHORT WAVE II	8.6—22.5MC
LONG WAVE	145-400KC			

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KK662

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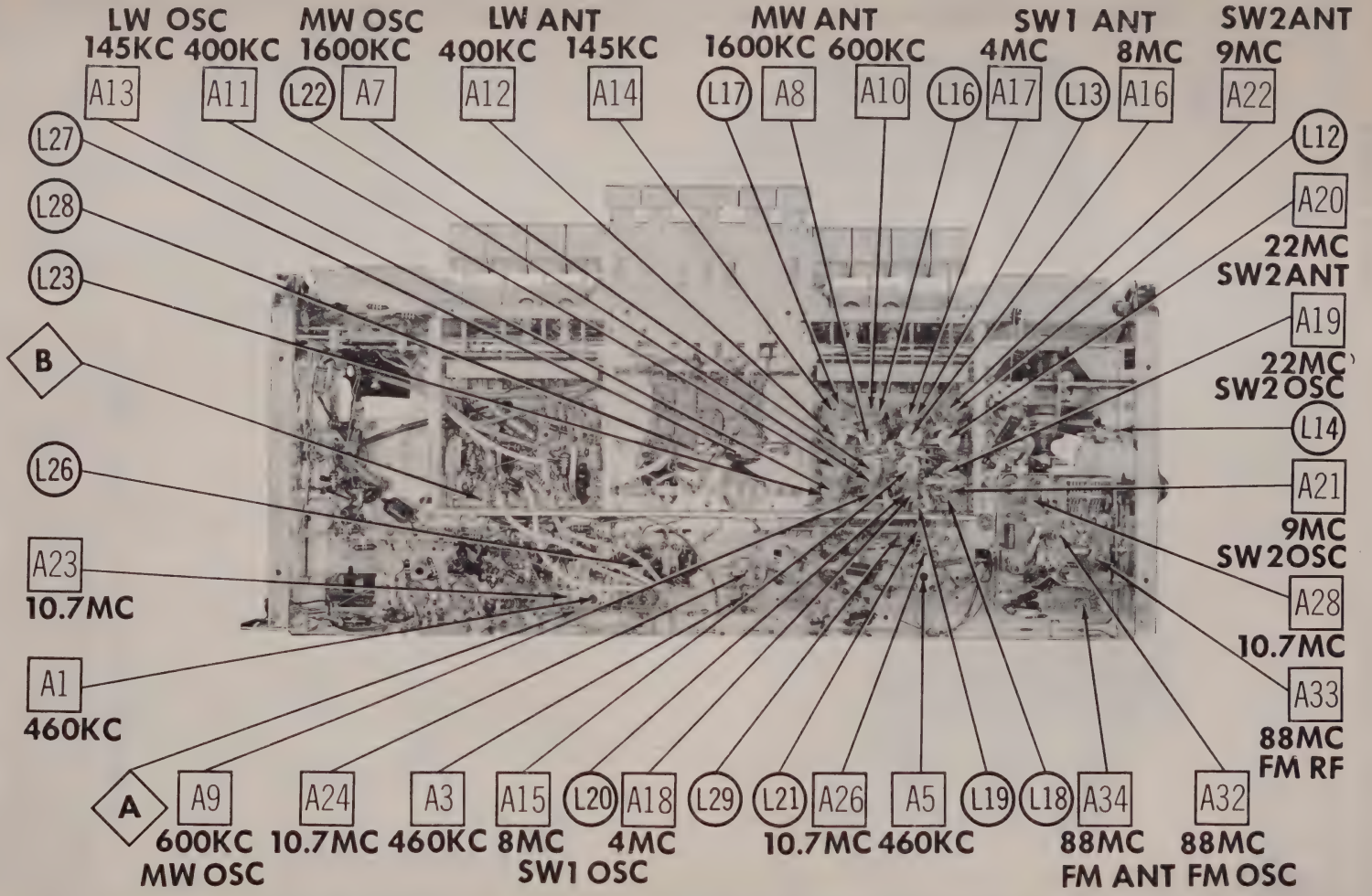


CHASSIS BOTTOM VIEW-ALIGNMENT & INDUCTOR IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Suggested Alignment Tools: A1 thru A6, A9, A10, A13, A14, A17, A18, A21 thru A29...
GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 2522, 2523, 2524, 2534, 2537
A30, A31.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 2 (grid) of AM Mixer. Low side to chassis.	460KC (400~ 30% AM)	(MW) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4, A5, A6	Adjust for maximum output.
2.	High side thru 270Ω to external antenna terminal. Low side to chassis.	1600KC	1600KC	"	A7, A8	"
3.	"	600KC	600KC	"	A9, A10	"
4.	"	400KC	(LW) 400KC	"	A11, A12	"
5.	"	145KC	145KC	"	A13, A14	"
6.	"	8.0MC	(SWI) 8.0MC	"	A15, A16	"
7.	"	4MC	4MC	"	A17, A18	"
8.	"	22MC	(SWII) 22MC	"	A19, A20	"
9.	"	9MC	9MC	"	A21, A22	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SELECTOR IN FM POSITION

Connect two matched 100K (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
10.	Place a thin insulated metal strip between the FM Converter tube and tube shield. Connect high side of generator to the metal strip. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A23, A24 A25, A26, A27, A28	Adjust for maximum deflection.
11.	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A29	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SELECTOR IN FM POSITION

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
10.	Place an insulated metal strip between the FM Converter tube and tube shield. Connect high side of generator to the metal strip. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A23, A24 A25, A26 A27, A28	Disconnect stabilizing Capacitor C3. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C3.
11.	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A29	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A 24 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
12.	Across FM antenna terminals with 150Ω in each lead.	108MC (Unmod.)	(FM) 108MC	DC probe to point Ⓐ. Common to chassis.	A30, A31	Adjust for maximum deflection.
13.	"	88MC	88MC	"	A32, A33, A34	"

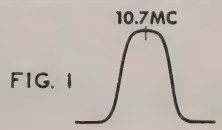


FIG. 1

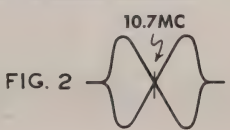
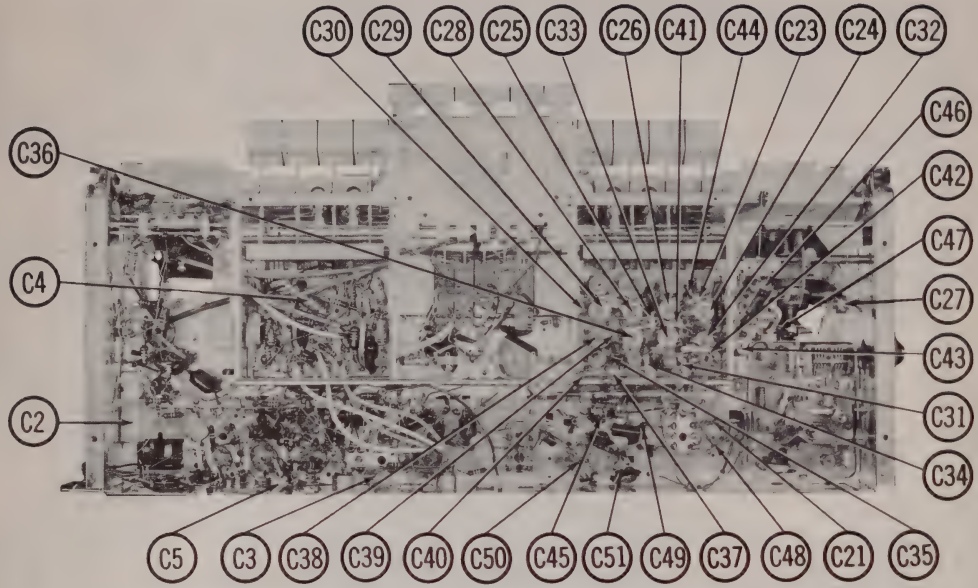
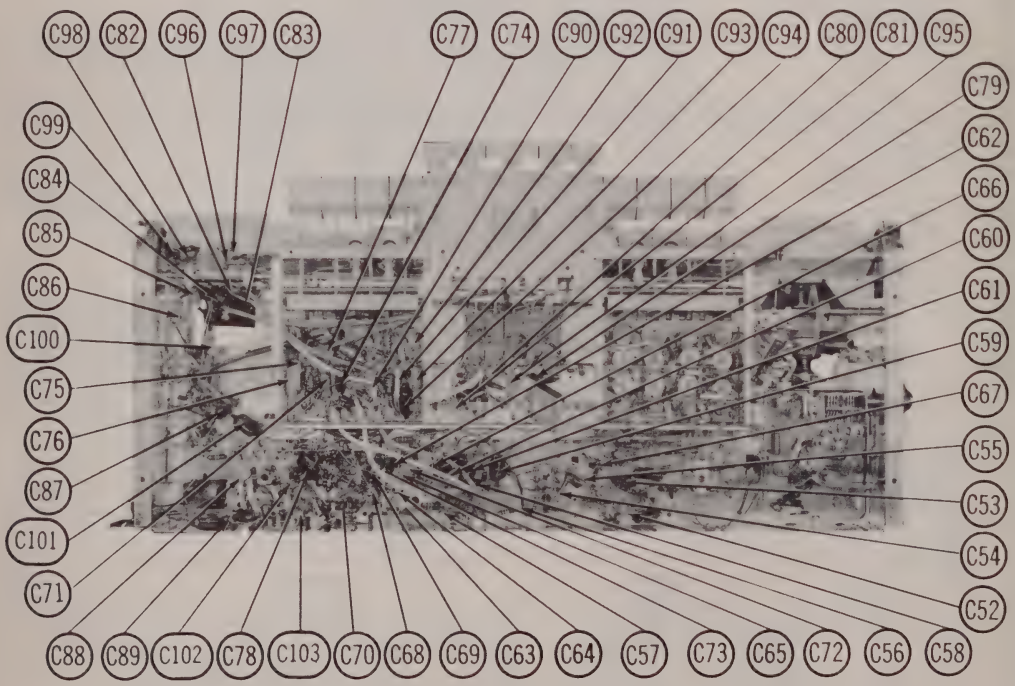


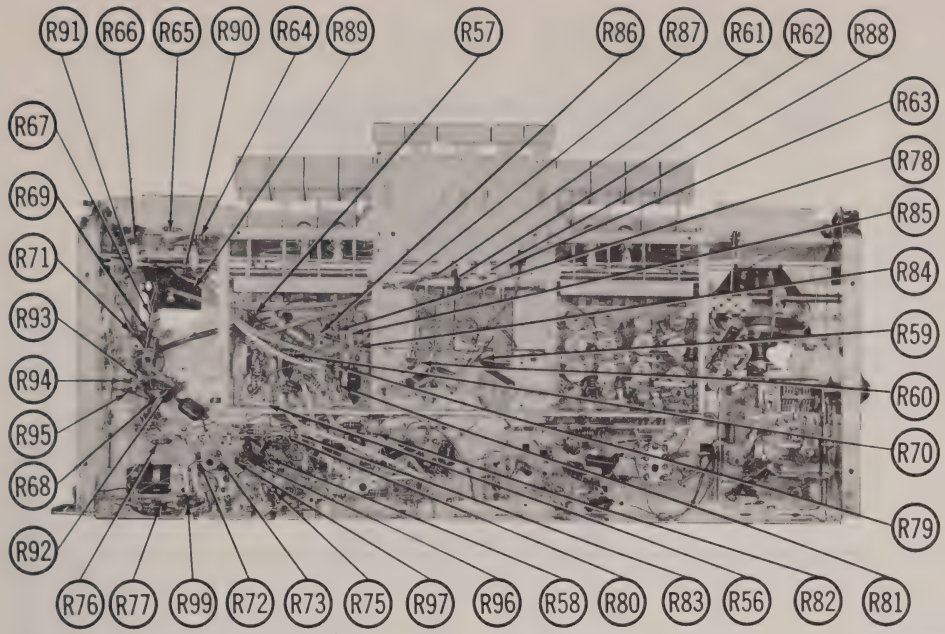
FIG. 2



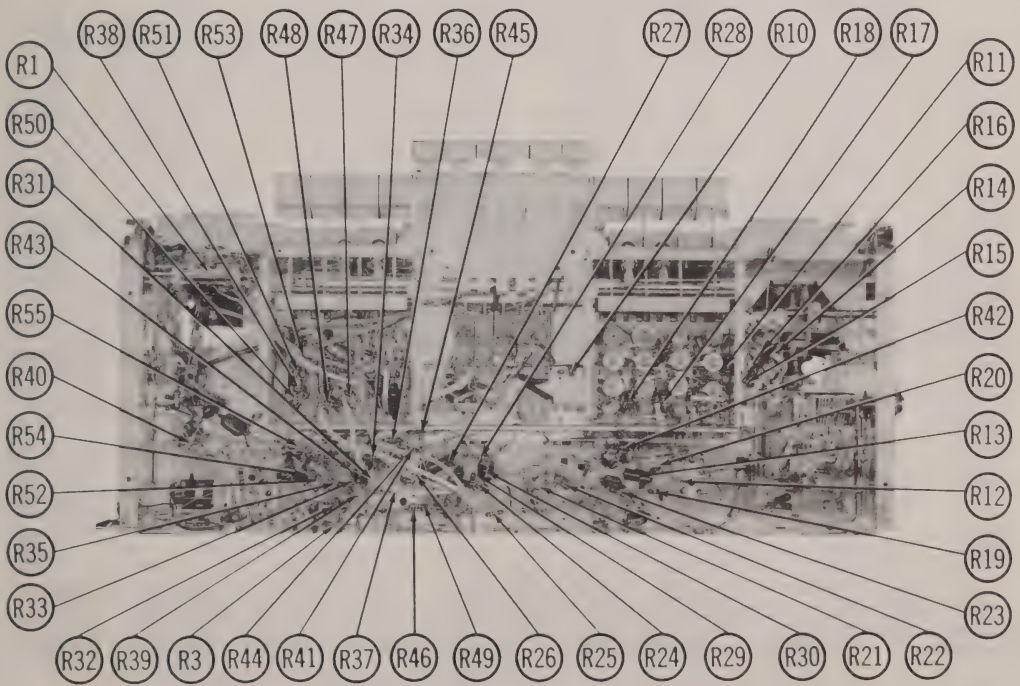
CHASSIS BOTTOM VIEW-CAPACITOR IDENT. (C2-C51)



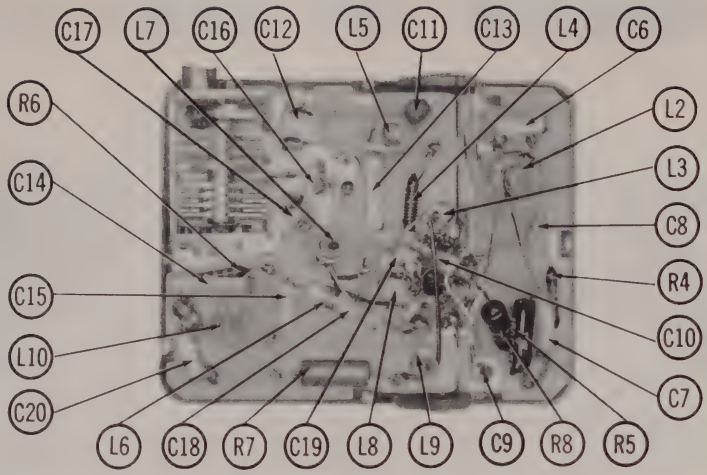
CHASSIS BOTTOM VIEW-CAPACITOR IDENT. (C52-103)



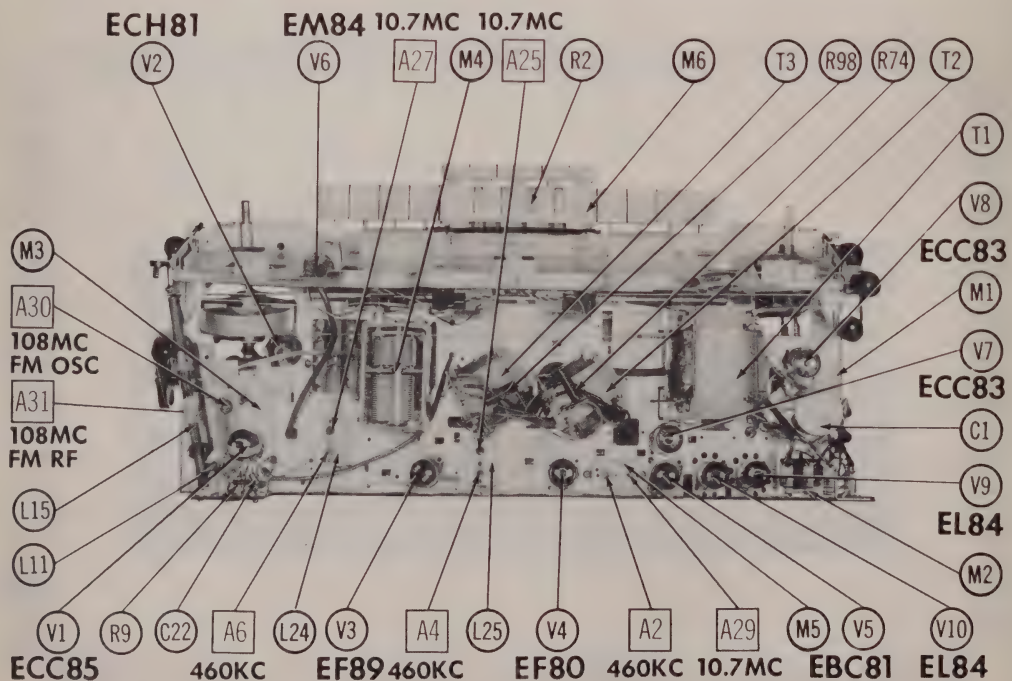
CHASSIS BOTTOM VIEW-RESISTOR IDENT. (R56-R99)



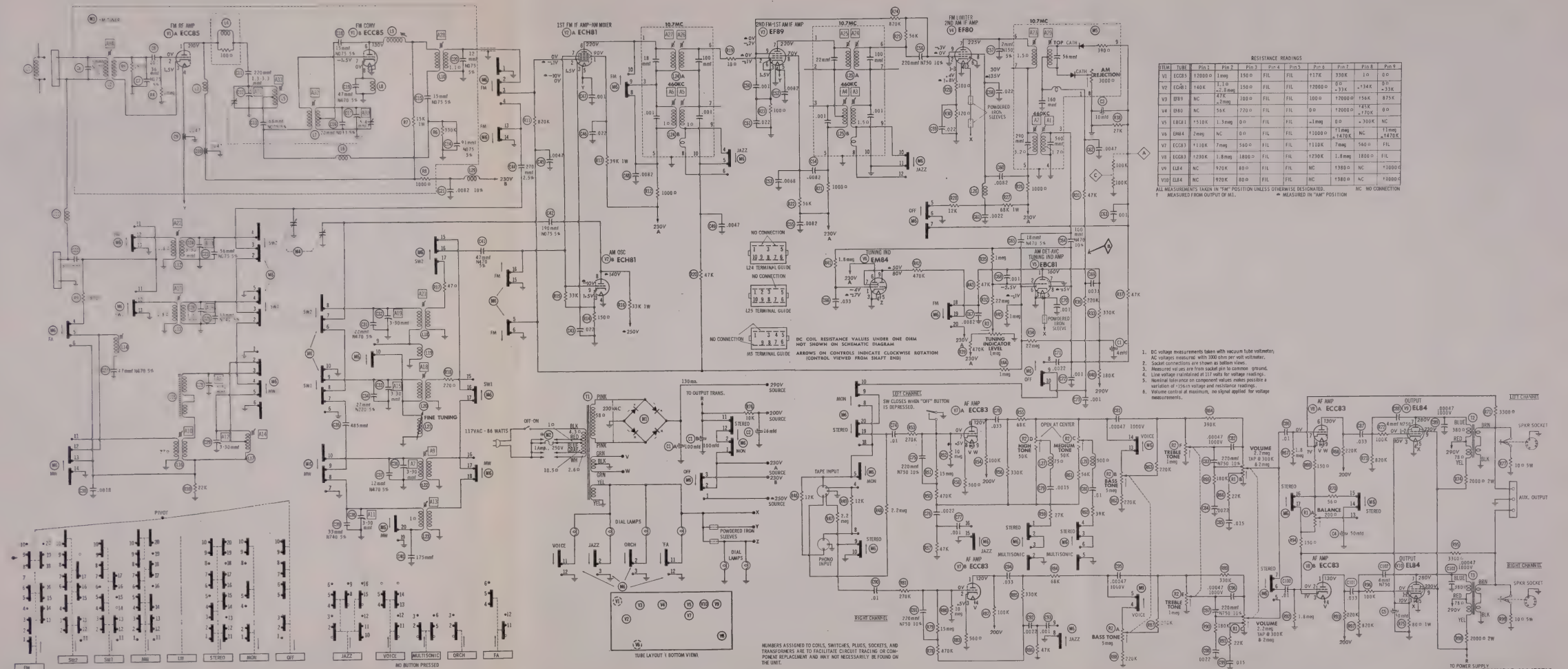
CHASSIS BOTTOM VIEW-RESISTOR IDENT. (R1-R55)



FM RF SUBCHASSIS



CHASSIS-TOP VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85	†2000Ω	1meg	150Ω	FIL	FIL	†17K	330K	1Ω	0Ω
V2	ECH81	†40K	1.1Ω ±1.8meg	150Ω	FIL	FIL	†2000Ω	0Ω ±33K	±134K	0Ω ±33K
V3	EF89	NC	47K ±2meg	100Ω	FIL	FIL	100Ω	†2000Ω	†56K	875K
V4	EF80	NC	56K	220Ω	FIL	FIL	0Ω	†2000Ω	†81K ±170K	0Ω
V5	EM84	†510K	1.3meg	0Ω	FIL	FIL	±1meg	0Ω	±300K	NC
V6	EM84	2meg	NC	0Ω	FIL	FIL	†1000Ω	†1meg ±1470K	NC	†1meg ±1470K
V7	ECC83	†110K	7meg	560Ω	FIL	FIL	†110K	7meg	560Ω	FIL
V8	ECC83	†230K	1.8meg	1800Ω	FIL	FIL	†230K	1.8meg	1800Ω	FIL
V9	EL84	NC	920K	80Ω	FIL	FIL	NC	†380Ω	NC	†1000Ω
V10	EL84	NC	920K	80Ω	FIL	FIL	NC	†380Ω	NC	†1000Ω

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED. NC NO CONNECTION
† MEASURED FROM OUTPUT OF M1. ◆ MEASURED IN "AM" POSITION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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GRUNDIG MAJESTIC MODEL 5199WE

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	FM RF Amp. -FM Conv.	ECC85
V2	1st FM IF Amplifier-AM Mixer-AM Osc.	ECH81
V3	2nd FM-1st AM IF Amp.	EF89
V4	FM Limiter-2nd AM IF Amp.	EF80
V5	AM Det. -AVC-Tuning Ind. Amp.	EBC81
V6	Tuning Indicator	EM84
V7	Left Channel AF Amp. - Right Channel AF Amp.	ECC83
V8	Left Channel AF Amp. - Right Channel AF Amp.	ECC83
V9	Left Channel Output	EL84
V10	Right Channel Output	EL84

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA GRUNDIG PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	100	350		AFH3-29-85	C0238	FP332.4	TMT-3447	TVL-3689.3	
B	100	350							
C	4	350							
C2	16	350		PRS1640	BR1635	TC64	TD-16-350	TVA-1607	
C3	10	70		SRE70V10	BBR10-90	TC42	MLV10-100	TE-1407	
C4	50	12		PT59	NLW50-15	TT15X50	MLV50-12	TE-1133	
C5	50	12		PT59	NLW50-15	TT15X50	MLV50-12	TE-1133	

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	15 N075 5%					*		
C7	36 N075 5%					*		
C8	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C9	.0047							
C10	.0047							
C11	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C12	1.3-3.3							
C13	68 N075 5%					*		
C14	91 N075 5%					*		
C15	15 N075 5%					*		
C16	20 N033 5%					*		
C17	.5-4							
C18	15 N075 5%					*		
C19	47 N470 5%					*		
C20	12 N075 5%					*		
C21	.0082 10%				D PMS6D82	CCD-822	GEM-16282	6PS-D82
C22	820		SI 820	D6-821	BYA10T82	CCD-821	GP382	10TS-T82
C23	56 N075 5%					*		
C24	3-30							
C25	33 N470 5%					*		
C26	3-30							
C27	47 N470 5%					*		
C28	3-30							
C29	3-30							
C30	.0018		SI 1800	D6-182	L10D18	CCS-182	B-218	10TD-D18
C31	22 N470 5%					*		
C32	3-30							
C33	3-30							
C34	27 N220 5%					*		10TCR-Q27
C35	485		SI 500	D6-501	L10T5	CCD-501	B-350	10TS-T50
C36	3-30							

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C37	12 N470 5%					*		
C38	3-30							
C39	33 N470 5%					*		
C40	175		SI 180	D6-181	L10T18	CCD-181	B-318	10TS-T18
C41	47 N470 5%					*		
C42	190 N075 5%					*		
C43	.022 250V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C44	270 2.5%					CM-15E-271G		
C45	.0047		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C46	.022 500V		P688N-022	DD-203	CUB4S22	4DP-2-223	GEM-6122	6TM-S22
C47	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C48	.0082		SI 8200	DD-822	DPMS6D82	CCD-822	B-282	6PS-D82
C49	.0047		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C50	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C51	.022 250V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C52	.0082		SI 8200	DD-822	DPMS6D82	CCD-822	B-382	6PS-D82
C53	.0068 500V		P688N-0068	D6-682	CUB6D68	6DP-1-682	GEM-6268	6TM-D68
C54	.0082		SI 8200	DD-822	DPMS6D82	CCD-822	B-282	6PS-D82
C55	.0082		SI 8200	DD-822	DPMS6D82	CCD-822	B-282	6PS-D82
C56	220 N750 10%		N750-DI 220	TCN-220	C10T22U	CCTN-221	CN7-322	10TCU-T22
C57	2 N150 5%					*		
C58	.022 500V		P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C59	.022 250V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C60	.0082		SI 8200	DD-822	DPMS6D82	CCD-822	B-282	6PS-D82
C61	.0022 500V		P688N-0022	D6-222	CUB6D22	6DP-1-222	GEM-622	6TM-D22
C62	.0047		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C63	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C64	100 N470 10%					*		
C65	18 N470 5%					*		
C66	.033 250V		P488N-033	DD-303	CUB6S33	4DP-2-333	GEM-4133	4TM-S33
C67	.0082		SI 8200	DD-822	DPMS6D82	CCD-822	B-282	6PS-D82
C68	.001 500V		P688N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C69	.0033 500V		P688N-0033	D6-332	CUB6D33	6DP-1-332	GEM-6233	6TM-D33
C70	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C71	.0022 500V		P688N-0022	D6-222	CUB6D22	6DP-1-222	GEM-622	6TM-D22
C72	.001		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10
C73	.001 500V		P688N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C74	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C75	220 N750 10%		N750-SI 220	TCN-220	C10T22U	CCTN-221	CN7-322	10TCC-T22
C76	.0022 500V		P688N-0022	D6-222	CUB6D22	6DP-1-222	GEM-622	6TM-D22
C77	.001 500V		P688N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C78	.033 500V		P688N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-S33
C79	.0015 500V		P688N-0015	D6-152	CUB6D15	6DP-1-152	GEM-6215	6TM-D15
C80	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C81	.00047 1000V			DD-470	BYA10T47	CCD-471	B-347	10TS-T47
C82	.00047 1000V			DD-470	BYA10T47	CCD-471	B-347	10TS-T47
C83	220 N750 10%		N750-SI 220	TCN-220	C10T22U	CCTN-221	CN7-322	10TCU-T22
C84	.0022 500V		P688N-0022	D6-222	CUB6D22	6DP-1-222	GEM-622	6TM-D22
C85	.015 250V		P488N-015	DD-153	CUB6S15	4DP-1-153	GEM-4115	4TM-S15
C86	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C87	.033 500V		P688N-033	D6-332	CUB6S33	6DP-3-333	GEM-6133	6TM-S33
C88	4 N750							
C89	.00047 1000V			DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C90	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C91	220 N750 10%		N750-SI 220	TCN-220	C10T22U	CCTN-221	CN7-322	10TCU-T22
C92	.0022 500V		P688N-0022	D6-222	CUB6D22	6DP-1-222	GEM-622	6TM-D22
C93	.001 500V		P688N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C94	.033 500V		P688N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-S33
C95	.00047 1000V			DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C96	.00047 1000V			DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C97	220 N750 10%		N750-SI 220	TCN-220	C10T22U	CCTN-221	CN7-322	10TCU-T22
C98	.0022 500V		P688N-0022	D6-222	CUB6D22	6DP-1-222	GEM-622	6TM-D22

PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C99	.015 250V		P488N-015	DD-153	CUB6S15	4DP-1-153	GEM-415	4TM-S15
C100	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C101	.033 500V		P688N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-S33
C102	4 N750							
C103	.00047 1000V			DD-471	BYA10T47	CCD-471	B-347	10TS-T47

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	GRUNDIG PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	200Ω	½						Balance
B	2.2meg*	½						Volume, Left Channel
C	2.2meg*	½						Volume, Right Channel
R2A	5meg	½						Tone, Bass, Right Channel
B	5meg	½						Tone, Bass, Left Channel
C	50K †	½						Tone, Medium
D	50K †	½						Tone, High
E	1meg	½						Tone, Treble, Right Channel
F	1meg	½						Tone, Treble, Left Channel
R3	1meg	½						Tuning Indicator Level

* Taps ⓐ 300K & 2meg.
† Open at Center of range.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	1meg				R37	47K			
R5	150Ω				R38	27K			
R6	330K				R39	470K			
R7	15K 1W				R40	180K			
R8	1000Ω				R41	1.8meg			
R9	1800Ω				R42	470K			
R10	22K				R43	47K			
R11	820K				R44	1meg			
R12	1000Ω				R45	1meg			
R13	39K 1W				R46	12K			
R14	150Ω				R47	2.2meg			
R15	33K				R48	2.2meg			
R16	33K 1W				R49	12K			
R17	47Ω				R50	470K			
R18	220Ω				R51	15meg			
R19	10Ω				R52	10meg			
R20	47K				R53	270K			
R21	1000Ω				R54	100K			
R22	56K				R55	68K			
R23	100Ω				R56	330K			
R24	820K				R57	47K			
R25	56K				R58	560Ω			
R26	1000Ω				R59	27K			
R27	68K 1W				R60	39K			
R28	12K				R61	56K			
R29	100Ω				R62	220K			
R30	120Ω				R63	220K			
R31	47K				R64	390K			
R32	22meg				R65	180K			
R33	330K				R66	22K			
R34	22meg				R67	1.6meg			
R35	1meg				R68	220K			
R36	220K				R69	150Ω			

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R70	56Ω				R85	330K			
R71	3300Ω				R86	47K			
R72	100K				R87	220K			
R73	820K				R88	220K			
R74	2000Ω 2W				R89	330K			
R75	80Ω 1W				R90	180K			
R76	10K				R91	22K			
R77	10Ω 5W	PW5-10	5W-SQ-10		R92	1.8meg			
R78	470K				R93	220K			
R79	15meg				R94	150Ω			
R80	10meg				R95	3300Ω			
R81	270K				R96	100K			
R82	100K				R97	820K			
R83	560Ω				R98	2000Ω 2W			
R84	68K				R99	10Ω 5W	PW5-10	5W-SQ-10	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		GRUNDIG PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Ant. Matching	9238-068					① Wound on 100Ω
L2	FM Ant.	9231-027					
L3	RF Choke	BV1975					
L4	RF Choke	BV1355 ①					
L5	FM RF	9226-037					
L6	RF Choke	BV1976					
L7	FM Osc.	9226-038					
L8	RF Choke	BV-1960					
L9	FM Mixer Plate	9226-032					
L10	1st FM IF	9226-033					
L11	RF Choke	BV1443					
L12	SW2 Ant.	9232-011					
L13	SW 1 Ant.	9231-016					
L14	460KC IF Trap	9208-055					
L15	Loopstick	9233-053					
L16	MW Ant.	9208-059					
L17	LW Ant.	9208-107					
L18	SW2 Osc.	9208-084					
L19	RF Choke	9218-004					
L20	SW1 Osc.	9231-017					
L21	SW Fine Tuning	9233-201					
L22	MW Osc.	9208-013					
L23	LW Osc.	9208-103					
L24A	2nd FM IF	FI7207-351					
B	1st AM IF						
L25A	3rd FM IF	FII7207-344					
B	2nd AM IF						
L26	RF Choke	BV1976					
L27	Tone Choke	9227-052					
L28	Tone Choke	9227-057					
L29	RF Choke	BV1976					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	GRUNDIG PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V ⓐ .8A	230V ⓐ .240A AC	6.3V ⓐ 2.7A	9096-040					
	SEC. 3	SEC. 4	SEC. 5						
	6.3VCT ⓐ .6A								

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA GRUNDIG PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	61000 Tap @ 17%	6 - 8Ω Tap @ 3 - 4Ω	9066-078					
T3	61000 Tap @ 17%	6 - 8Ω Tap @ 3 - 4Ω	9066-079					

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA GRUNDIG PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.130A	B250C150 *				* Selenium Bridge

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA GRUNDIG PART No. FUSE	GRUNDIG PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2		1A 250V Note 1					GMA-1	

Note 1. For 220-240V Power Source, Use .5A

MISCELLANEOUS

ITEM No.	PART NAME	GRUNDIG PART No.	NOTES
M3	FM Tuner Tuning Cap.	9653-012	Complete 2 Gang
M4	Detector Ass'y.	FU17207-95	Includes Diodes, Cap, Resistors & Control
M5	Switch	7612-0751-076	Selector (Pushbutton Ass'y.)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

DIAL CORD STRINGING

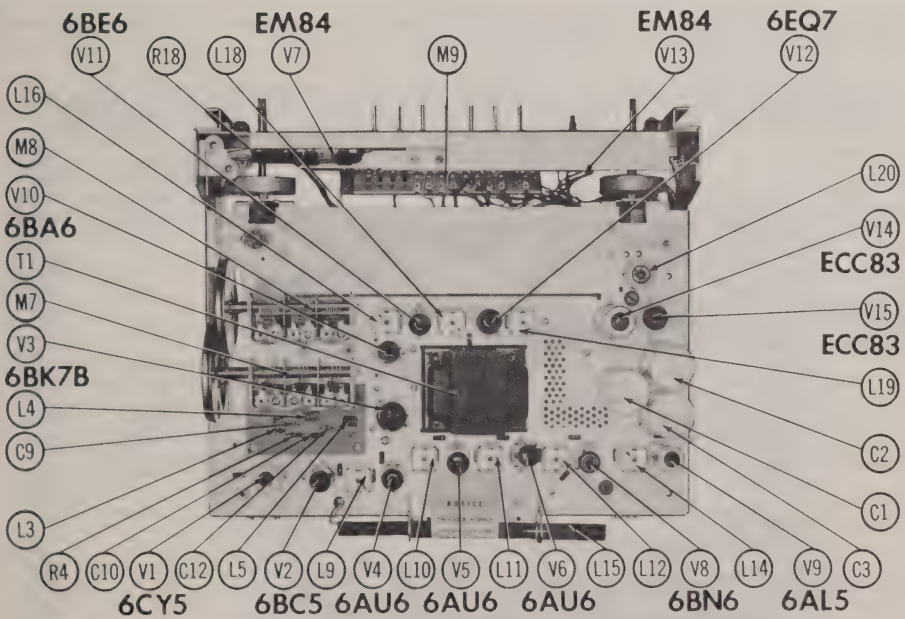
PHOTOFACT® Folder

HARMAN-KARDON MODEL ST360A (The Madrigal II)

HARMAN-KARDON MODEL
ST360A (The Madrigal II)

TRADE NAME	Harman-Kardon Model ST360A (The Madrigal II)		
MANUFACTURER	Harman-Kardon, Inc., 520 Main Street, Westbury, L. I., N. Y.		
TYPE SET	AC Operated 15 Tube FM-AM Tuner		
POWER SUPPLY	105 – 125 Volts AC, 50-60 Cycles	RATING	50 Watts, .5 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	530 – 1640KC	FREQ. MOD.	88 – 108MC

HARMAN-KARDON MODEL
ST360A (The Madrigal II)



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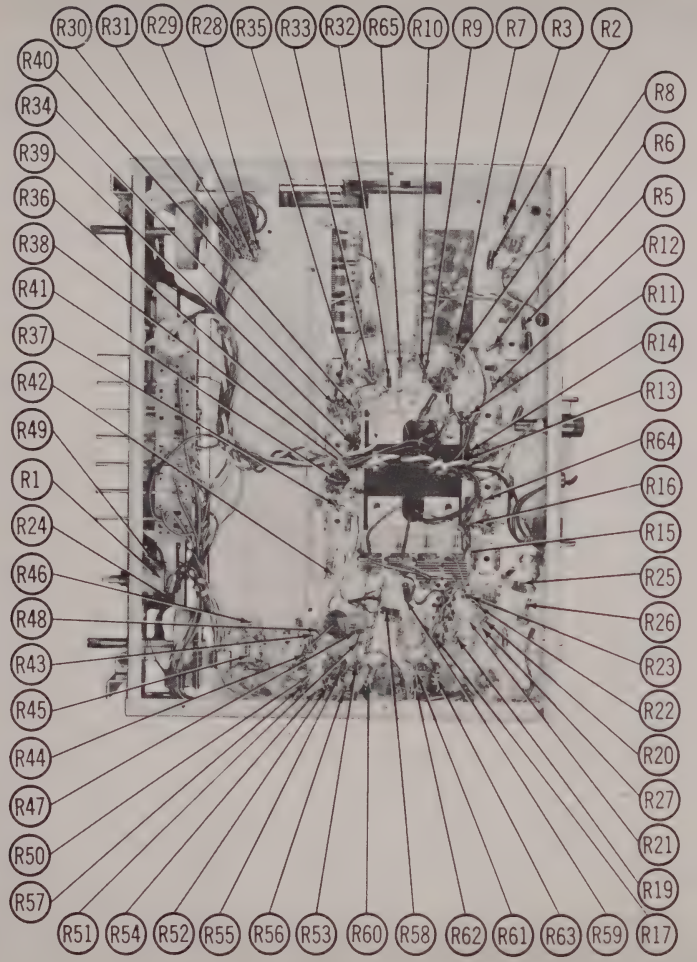
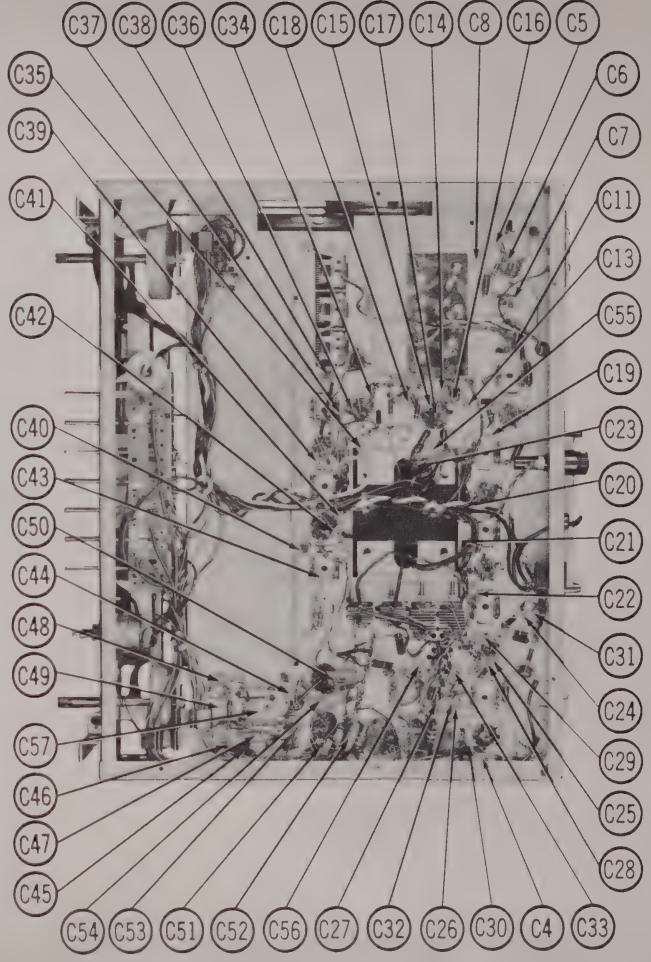
KL663

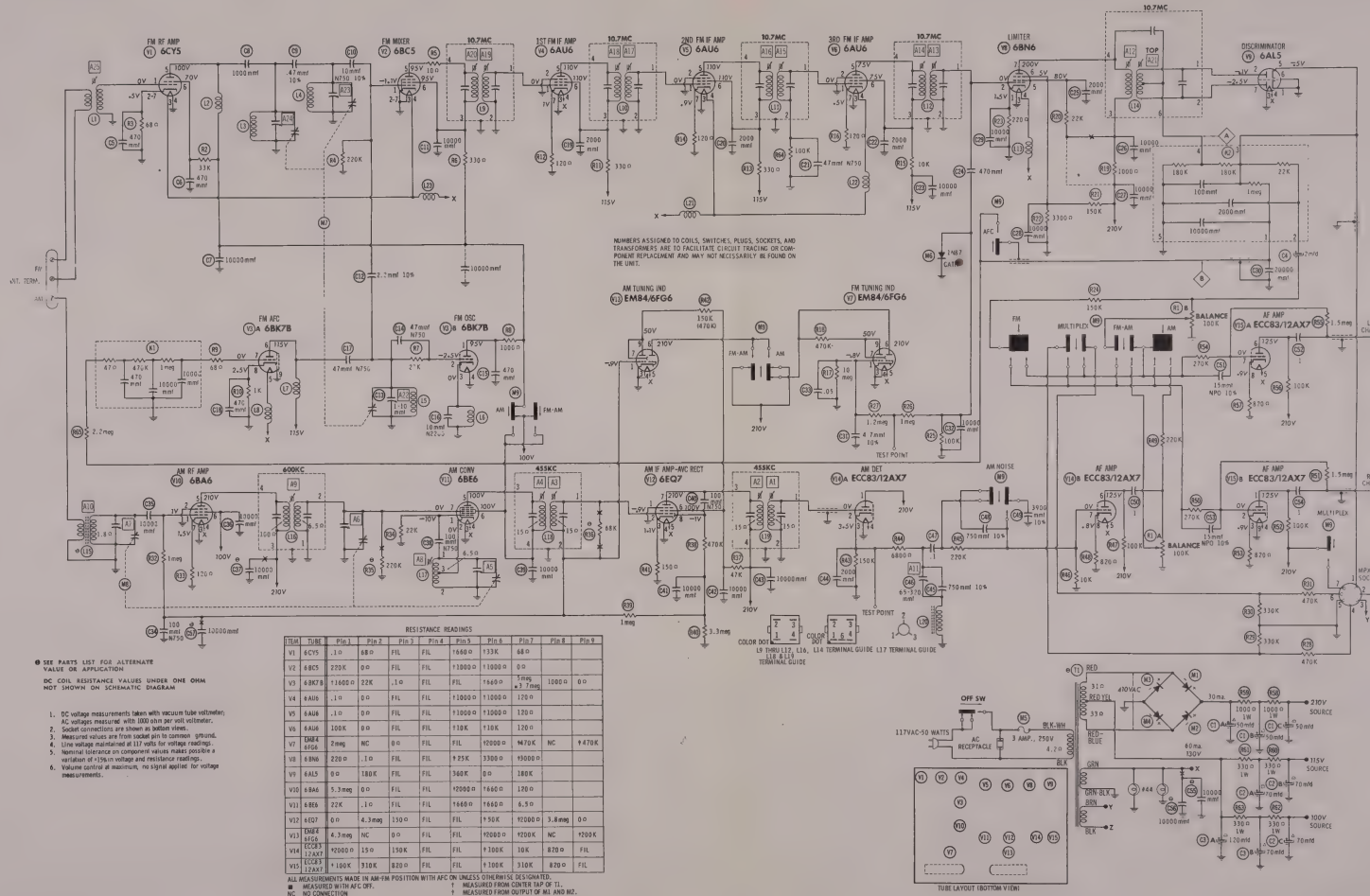
SET 543 FOLDER 10



CHASSIS BOTTOM VIEW-RESISTOR IDENT.



CHASSIS BOTTOM VIEW-CAPACITOR IDENT.



● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CY5	.10	68Ω	FIL	FIL	†680Ω	†33K	68Ω		
V2	6BC5	220K	0Ω	FIL	FIL	†1000Ω	†1000Ω	0Ω		
V3	6BK7B	†160Ω	22K	.10	FIL	FIL	†66Ω	1meg ±3.7meg	1000Ω	0Ω
V4	6AU6	.10	0Ω	FIL	FIL	†1000Ω	†1000Ω	120Ω		
V5	6AU6	.10	0Ω	FIL	FIL	†1000Ω	†1000Ω	120Ω		
V6	6AU6	100K	0Ω	FIL	FIL	†10K	†10K	120Ω		
V7	EM84 6FG6	2meg	NC	0Ω	FIL	FIL	†2000Ω	†470K	NC	†470K
V8	6BN6	220Ω	.10	FIL	FIL	†25K	330Ω	†900Ω		
V9	6AL5	0Ω	180K	FIL	FIL	360K	0Ω	180K		
V10	6BA6	5.3meg	0Ω	FIL	FIL	†2000Ω	†66Ω	120Ω		
V11	6BE6	22K	.10	FIL	FIL	†68Ω	†66Ω	6.5Ω		
V12	6EQ7	0Ω	4.3meg	150Ω	FIL	FIL	†50K	†2000Ω	3.8meg	0Ω
V13	EM84 6FG6	4.3meg	NC	0Ω	FIL	FIL	†2000Ω	†200K	NC	†200K
V14	ECC83 12AX7	†2000Ω	15Ω	150K	FIL	FIL	†100K	10K	820Ω	FIL
V15	ECC83 12AX7	†100K	310K	820Ω	FIL	FIL	†100K	310K	820Ω	FIL

ALL MEASUREMENTS MADE IN AM-FM POSITION WITH AFC ON UNLESS OTHERWISE DESIGNATED.
■ MEASURED WITH AFC OFF.
NC NO CONNECTION
† MEASURED FROM CENTER TAP OF T1.
† MEASURED FROM OUTPUT OF M1 AND M2.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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HARMAN-KARDON MODEL ST360A (The Madrigal II)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools:

A1 thru A4, A9, A12 thru A21.....	GENERAL CEMENT #5097, 8727 WALSCO #2515
A5, A6, A7, A22, A23, A24.....	GENERAL CEMENT#5004, 5008, 5009 WALSCO #2520
A8, A25.....	GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440 WALSCO #2526, 2543, 2544, 2545
A11.....	GENERAL CEMENT #8721, 8722 WALSCO #2519

AM ALIGNMENT – SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .1mfd to RF stator lug of AM tuning gang. Low side to chassis.	455KC (400~ 30% AM)	(AM) Tuning gang fully open.	AC probe across tuner output.	A1, A2, A3, A4	Adjust for maximum output.
2.	High side to AM antenna terminal. Low side to chassis.	1400KC	1400KC	"	A5, A6, A7	"
3.	"	600KC	600KC	"	A8, A9, A10	Adjust for maximum output. A10 is adjusted by sliding the antenna turns along loopstick slug. Repeat Step 2.
4.	High side thru .1mfd to RF stator lug of AM tuning gang. Low side to chassis.	455KC (10KC 30% AM).	1400KC	"	A11	Adjust for MINIMUM output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .01mfd to pin 1 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe thru 1meg to point (A). Common to chassis.	A12, A13, A14, A15, A16, A17, A18, A19, A20	Adjust for maximum deflection.
6.	"	"	"	DC probe to point (B). Common to chassis.	A21	Adjust for zero reading. A position and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE – SELECTOR IN FM POSITION

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5	High side thru .01mfd to pin 1 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. thru 47K to point (A). Low side to chassis.	A12, A13, A14, A15, A16, A17, A18, A19, A20	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
6.	"	"	"	Vert. amp. to point (B). Low side to chassis.	A21	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A12 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT – SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals with 150Ω in each lead.	106MC (Unmod.)	(FM) 106MC	DC probe thru 1meg to point (A). Common to chassis.	A22, A23 A24	Adjust for maximum deflection.
8.	"	90MC	90MC	"	L5, L4, L3, A25	"

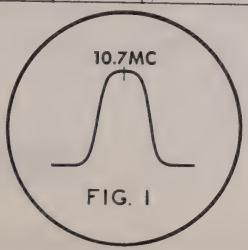


FIG. 1

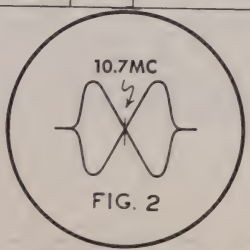
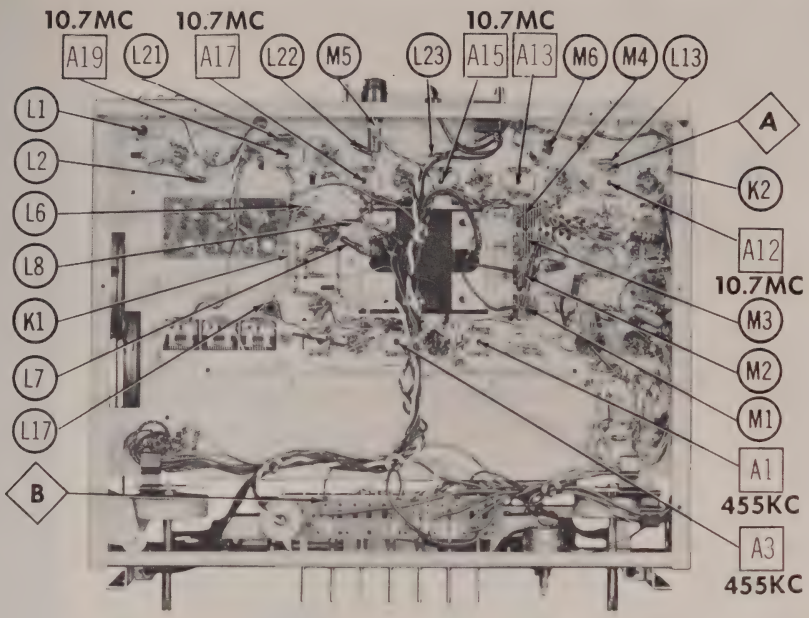
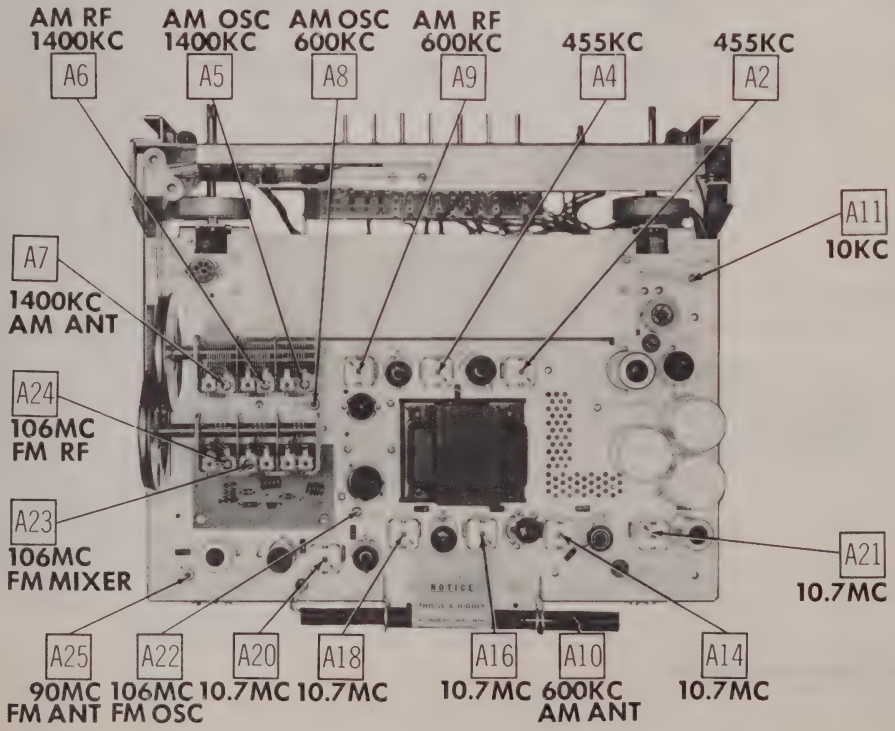


FIG. 2



CHASSIS BOTTOM VIEW-ALIGN., INDUCTOR & MISC. IDENT.



CHASSIS TOP VIEW-ALIGNMENT IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	FM RF Amplifier	6CY5
V2	FM Mixer	6BC5
V3	FM Osc.-AFC	6BK7B
V4	1st FM IF Amplifier	6AU6
V5	2nd FM IF Amplifier	6AU6
V6	3rd FM IF Amplifier	6AU6
V7	FM Tuning Indicator	EM84/6FG6
V8	FM Limiter	6BN6
V9	Discriminator	6AL5
V10	AM RF Amplifier	6BA6
V11	AM Converter	6BE6
V12	AM IF Amp.-AVC Rect.	6EQ7
V13	AM Tuning Indicator	EM84/6FG6
V14	AM Det.-AF Amp.	ECC83/12AX7
V15	AF Amplifier	ECC83/12AX7

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Harman-Kardon PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲50	300	JE2923271		B0260	FP327.89	TMD-2320	TVL-3583	
B	■50	300			BR5035		TD-50-450		
C	▲50	300							
C2A	■70	150	JE2923272		XB0183	FP214.5	TMD-2205	TVL-2442.4	
B	▲70	150			BR8015	TC492	TD-80-150	TVA-1418	
C	▲70	150							
C3A	▲120	200	JE2923273		XA0265.3	WP219	TMS-1480	TVL-1540	
B	▲70	150			BR8015		TD-80-150	TVA-1418	
C4	2	25		PTT75	NLW2-50	TT150X2	MLV2-50	TE-1201	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C6	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C7	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C9	.47mmf 10%							
C10	10 N750 10%		N750-DI 10	DTN-10	C10Q1U	CCTN-100	CN7-410	10TCU-Q10
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C12	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C13	1-10	#JV20688		829-10				
C14	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C15	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C16	10 N2200					*		
C17	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C18	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C19	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C20	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C21	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C22	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C23	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C24	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C25	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C26	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C27	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C30	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C31	4.7 10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C32	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C33	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-473	GEM-4147	2TM-S50
C34	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C36	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C37	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C38	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C39	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C40	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C41	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C42	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C43	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C44	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C45	750 10%		DI-750		5R5T75	CCD-751	GP375	10TS-T75
C46	65-320	#JVCOM4008				303		
C47	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C48	750 10%		DI-750		5R5T75	CCD-751	GP375	10TS-T75
C49	3900 10%		DI-4000		PM6D4	CCD-392	JL-239	10TS-D39
C50	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C51	15 NPO 10%		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C52	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C53	15 NPO 10%		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C54	.1 400V		P488N-1	DF-104	CUB4P1	4DP-104	GEM-401	4TM-P10
C55	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C56	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C57	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. Not used in some versions.
Harman-Kardon Part Number.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Harman-Kardon PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	100K	½	RV3223697					Balance, Left Channel
B	100K	½						Balance, Right Channel

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	33K			
R3	68Ω			
R4	220K			
R5	10Ω			
R6	330Ω			
R7	22K			
R8	1000Ω			
R9	68Ω			
R10	1000Ω			
R11	330Ω			
R12	120Ω			
R13	330Ω			
R14	120Ω			
R15	10K			
R16	120Ω			
R17	10meg			
R18	470K			
R19	1000Ω			
R20	22K			
R21	150K			
R22	3300Ω			
R23	220Ω			
R24	150K			
R25	100K			
R26	1meg			
R27	1.2meg			
R28	470K			
R29	330K			
R30	330K			
R31	470K			
R32	1meg			
R33	120Ω			
R34	22K			
R35	220K			Note 1
R36	68K			Note 1
R37	47K			
R38	470K			
R39	1meg			
R40	3.3meg			
R41	150Ω			
R42	150K			(470K) *
R43	150K			
R44	6800Ω			
R45	220K			
R46	10K			
R47	100K			
R48	820Ω			
R49	220K			
R50	270K			
R51	1.5meg			
R52	100K			
R53	820Ω			
R54	270K			
R55	1.5meg			
R56	100K			
R57	820Ω			
R58	1000Ω 1W			
R59	1000Ω 1W			
R60	330Ω 1W			
R61	330Ω 1W			
R62	330Ω 1W			
R63	330Ω 1W			
R64	100K			
R65	2.2meg			

* Alternate Value.
Note 1. Not used in some versions.

PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Harman-Kardon PART No.	REPLACEMENT DATA
K1	AFC Comp.	470mmf, 10000mmf, 10000mmf, 47Ω, 470K, 1meg	PCCOM3080	
K2	Discriminator Network	100mmf, 2000mmf, 10000mmf, 22K, 180K, 180K, 1meg	PCCOM3081	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA Harman-Kardon PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	FM Ant.	GL3224505					① Some versions may use Part #GL2923276
L2	RF Choke(3.3uh)	GC2503070	BC-564	4608	RTC-8518	T858	
L3	FM RF	GL781543					
L4	FM Mixer	GL781543					
L5	FM Osc.	GL781544					
L6	RF Choke (1uh)	GC2503069	BC-561	4602	RTC-8515	T855	
L7	RF Choke(3.3uh)	GC2503070	BC-564	4608	RTC-8518	T858	
L8	Fil. Choke(3.3uh)	GC2503070	BC-564	4608	RTC-8518	T858	
L9	1st FM IF	GT2503045	FM-254	1463	RTC-8599	T633	
L10	2nd FM IF	GT2503045	FM-254	1463	RTC-8599	T633	
L11	3rd FM IF	GT2503045	FM-254	1463	RTC-8599	T633	
L12	4th FM IF	GT2503045	FM-254	1463	RTC-8599	T633	
L13	Fil. Choke(3.3uh)	GC2503070	BC-564	4608	RTC-8518	T858	
L14	Discriminator	GT2503052	FM-253	1464	RTC-8665	T634	
L15	Loopstick	GL3223629 ①	BC-418	705-A		T532	
L16	AM RF	GT2493012					
L17	AM Osc.	STCOM3279	BC-393	70-OSC	RTC-8647	T512	
L18	1st AM IF	GT2493013	BC-352	12-C1	RTC-8632	T607	
L19	2nd AM IF	GT2493013	BC-353	12-C2	RTC-8633	T608	
L20	10KC Filter	GCCOM3336					
L21	Fil. Choke(3.3uh)	GC2503070	BC-564	4608	RTC-8518	T858	
L22	Fil. Choke(3.3uh)	GC2503070	BC-564	4608	RTC-8518	T858	
L23	Fil. Choke(3.3uh)	GC2503070	BC-564	4608	RTC-8518	T858	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA Harman-Kardon PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V Ⓐ .5A	205VCT Ⓐ .120A AC	6.3V Ⓐ 5A	FT3223626A ①					① Some versions may use Part #FT2923274
	SEC. 3	SEC. 4	SEC. 5						
	6.3V Ⓐ (Not Used)								

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA Harman-Kardon PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.030A	STCOM3270		75		
M2	.030A	Z1362133		65		
M3	.030A	STCOM3270		75		
M4	.030A	Z1362133		65		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA Harman-Kardon PART No. FUSE	HOLDER	LITTELFUSE PART No. FUSE	HOLDER	BUSS PART No. FUSE	HOLDER
M5	3AG	3A 250V	ZCOM3291	HC33901	312003 (3AG 3A 250V)	342001	AGC 3	HKP

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA Harman-Kardon PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M6	1N87 *			1N87 *	1N87 *	* FM Tuning Indicator Rect.

MISCELLANEOUS

ITEM No.	PART NAME	Harman-Kardon PART No.	NOTES
M7	Tuning Cap.	JV2923213	FM, 3 Gang
M8	Tuning Cap.	JV2923214	AM, 3 Gang (Ant 24-381mmf, RF 20-390mmf, Osc 15-90mmf)
M9	Switch	EP3224429	Function Selector (Pushbutton Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

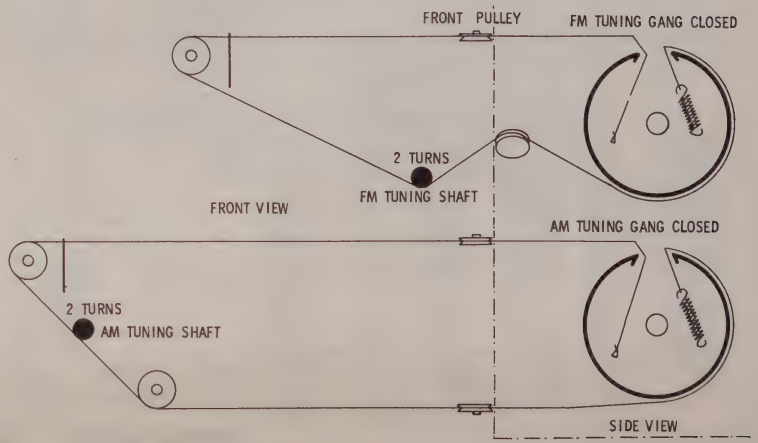
NAME	PART NO.	DESCRIPTION
Dial Glass	P3223624	
Dial Pointer	P2923242	AM
Dial Pointer	P3224417	FM
Knob	PCOM3601	Tuning
Knob	PCOM3625	Balance
Pushbutton	PCOM3285	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

DIAL CORD STRINGING



PHOTOFACT® Folder with CIRCUITRACE®

HEATH MODEL
PT-1, W-PT-1

HEATH MODEL
PT-1, W-PT-1

HEATH MODEL
PT-1, W-PT-1

TRADE NAME	Heath Models PT-1 (Kit), W-PT-1 (Wired)		
MANUFACTURER	Heath Co., A Subsidiary of Daystrom Inc., Benton Harbor, Michigan		
TYPE SET	AC Operated 16 Tube FM-AM Tuner		
POWER SUPPLY	110-120 Volts AC, 50-60 Cycles	RATING	62 Watts, .58 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540 — 1600KC	FREQ. MOD.	88 — 108MC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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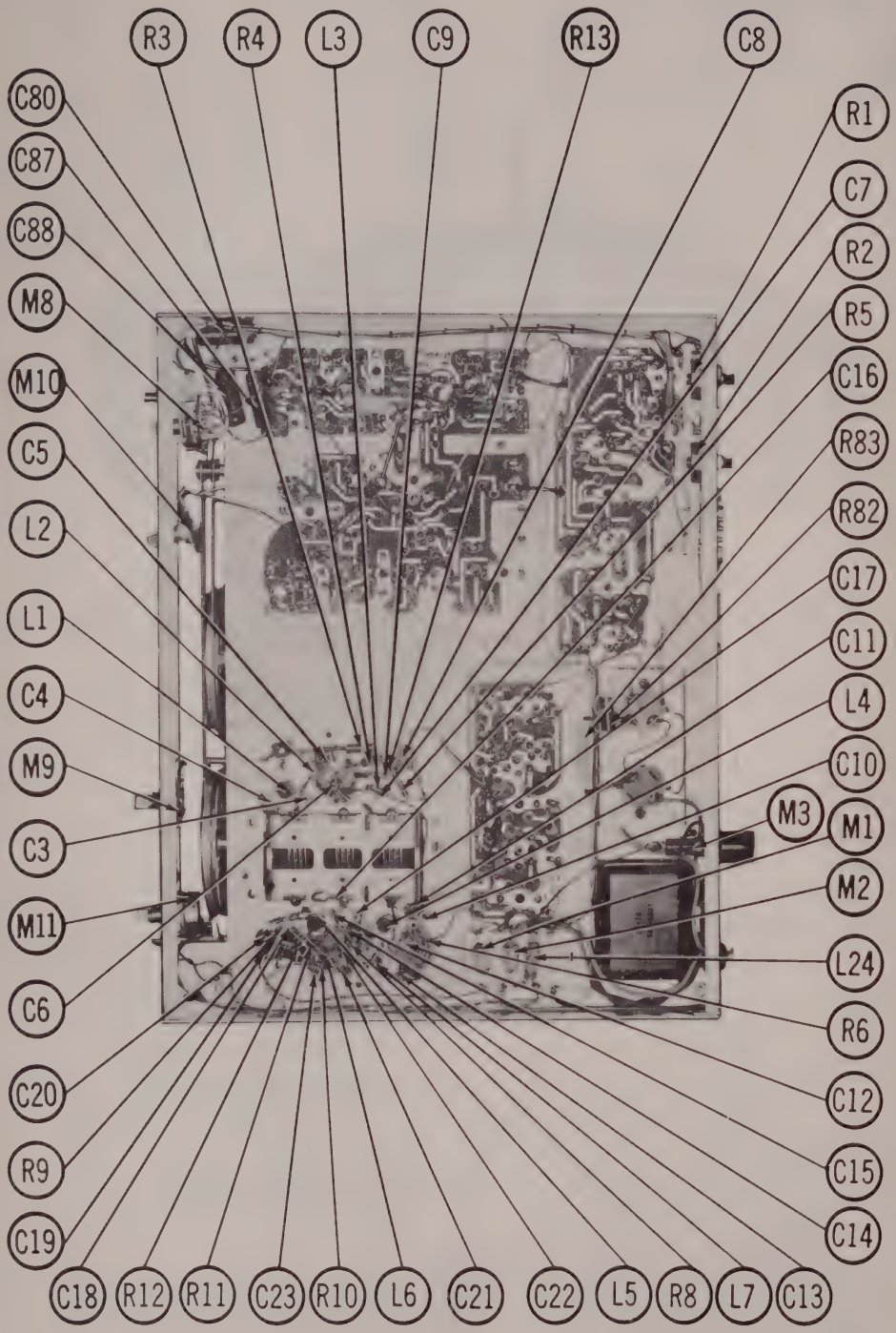
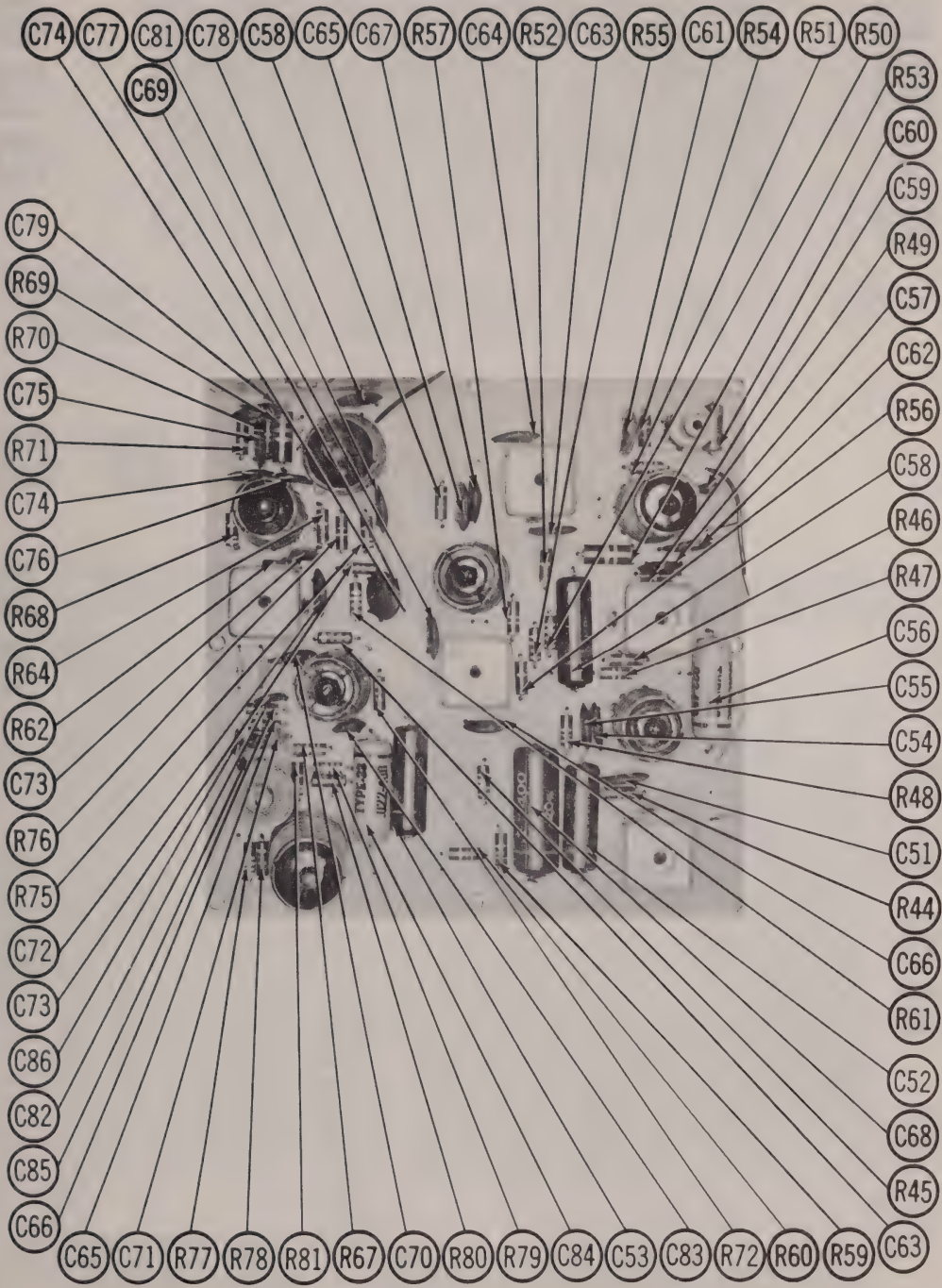
KL660

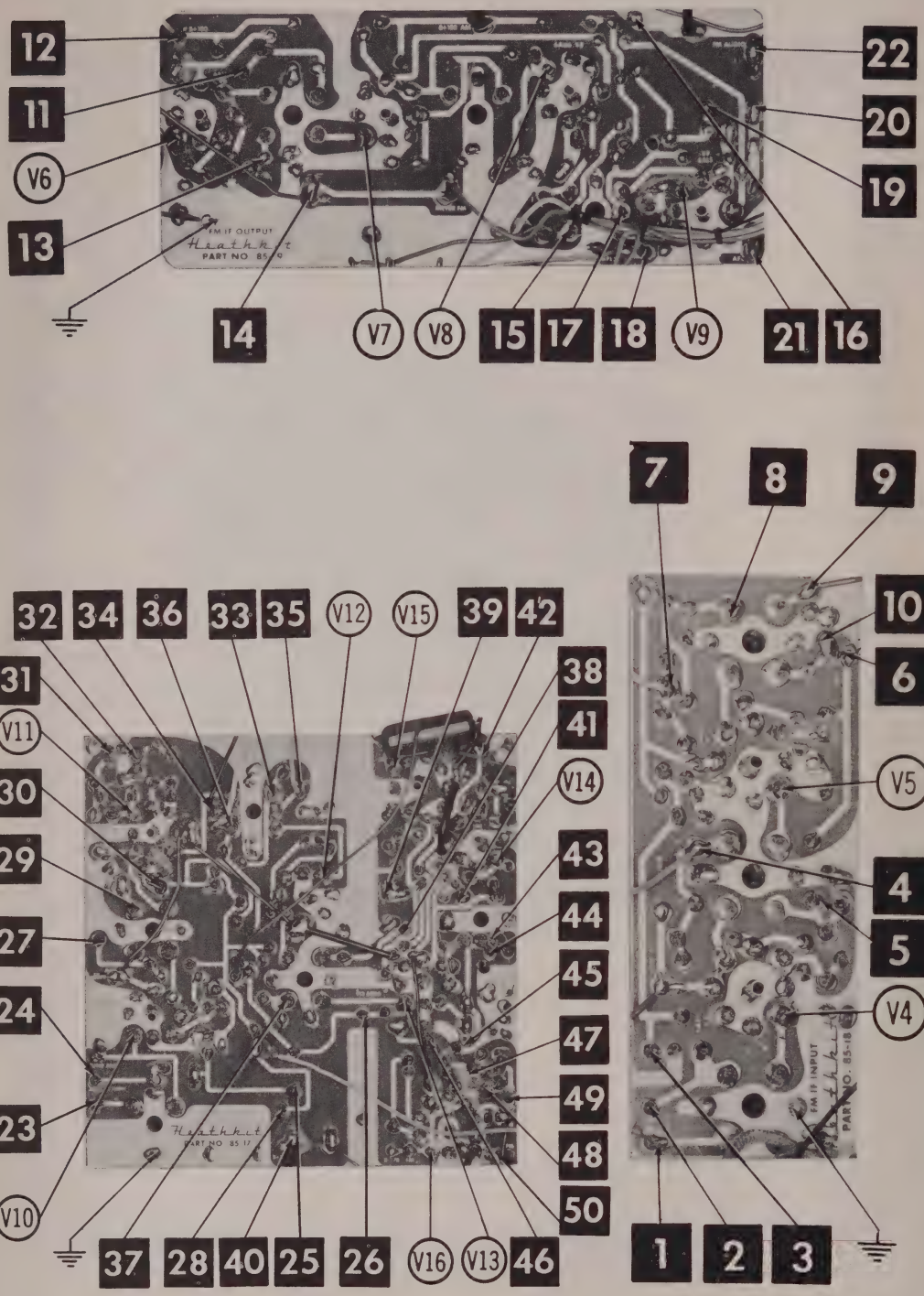
SET 543 FOLDER 11



CHASSIS BOTTOM VIEW-CAPACITOR, INDUCTOR & MISC. IDENT.



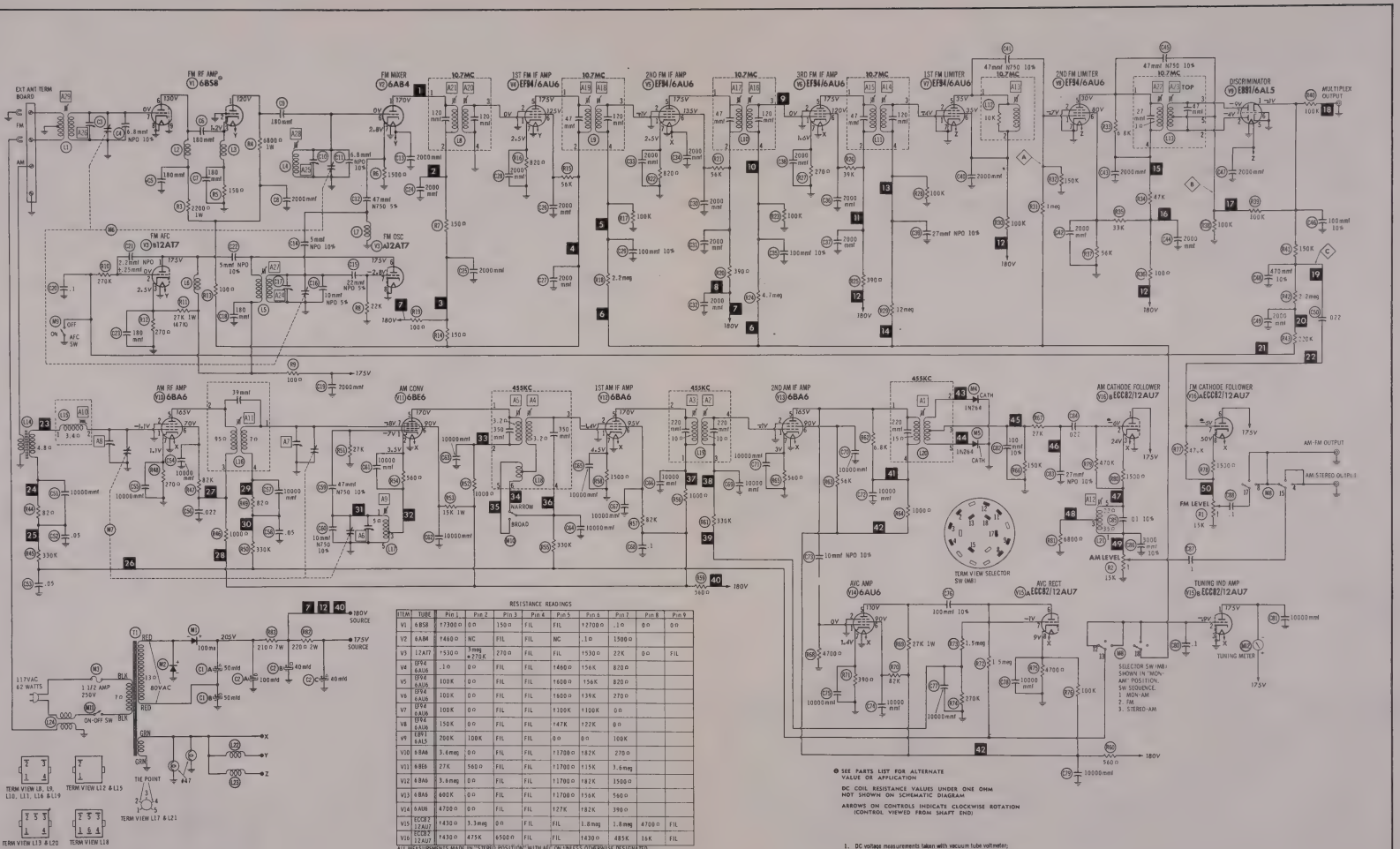
AM PRINTED BOARD



A Howard W. Sams CIRCUITRACE Photo

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BS8	▽7300Ω	0Ω	150Ω	FIL	FIL	▽2700Ω	.1Ω	0Ω	0Ω
V2	6AB4	▽460Ω	NC	FIL	FIL	NC	.1Ω	1500Ω		
V3	12AT7	▽530Ω	3 meg ●275K	270Ω	FIL	FIL	▽530Ω	22K	0Ω	FIL
V4	EF94 6AU6	.1Ω	0Ω	FIL	FIL	▽460Ω	156K	820Ω		
V5	EF94 6AU6	100K	0Ω	FIL	FIL	▽600Ω	156K	820Ω		
V6	EF94 6AU6	100K	0Ω	FIL	FIL	▽600Ω	139K	270Ω		
V7	EF94 6AU6	100K	0Ω	FIL	FIL	▽100K	▽100K	0Ω		
V8	EF94 6AU6	150K	0Ω	FIL	FIL	▽47K	▽22K	0Ω		
V9	EB91 6AL5	200K	100K	FIL	FIL	0Ω	0Ω	100K		
V10	6BA6	3.6meg	0Ω	FIL	FIL	▽17000Ω	▽82K	270Ω		
V11	6BE6	27K	560Ω	FIL	FIL	▽17000Ω	▽15K	3.6meg		
V12	6BA6	3.6meg	0Ω	FIL	FIL	▽17000Ω	▽82K	3500Ω		
V13	6BA6	600K	0Ω	FIL	FIL	▽17000Ω	▽56K	560Ω		
V14	6AU6	4700Ω	0Ω	FIL	FIL	▽27K	▽82K	390Ω		
V15	ECC82 12AU7	▽430Ω	3.3meg	0Ω	FIL	FIL	FIL	1.8meg	1.8meg	4700Ω	FIL
V16	ECC82 12AU7	▽430Ω	475K	6500Ω	FIL	FIL	▽430Ω	485K	16K	FIL

RESISTANCE READINGS

ALL MEASUREMENTS MADE IN "STEREO POSITION" WITH AFC ON UNLESS OTHERWISE DESIGNATED.
● MEASURED WITH "AFC" OFF.
▽ MEASURED FROM CATHODE.
† MEASURED FROM OUTPUT OF M3.
NC NO CONNECTION

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

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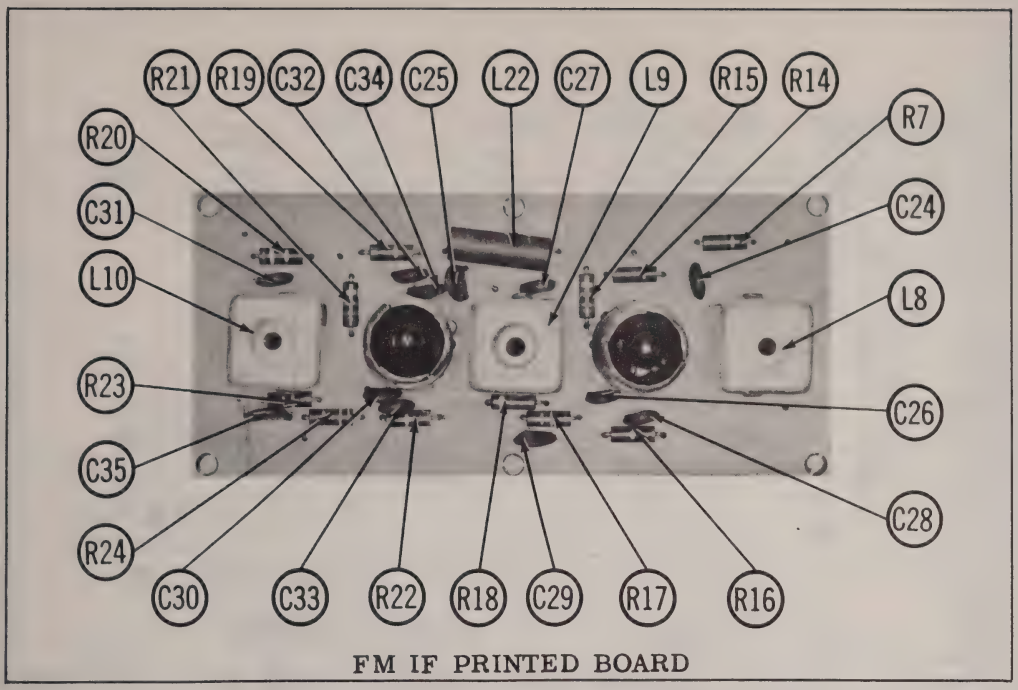
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

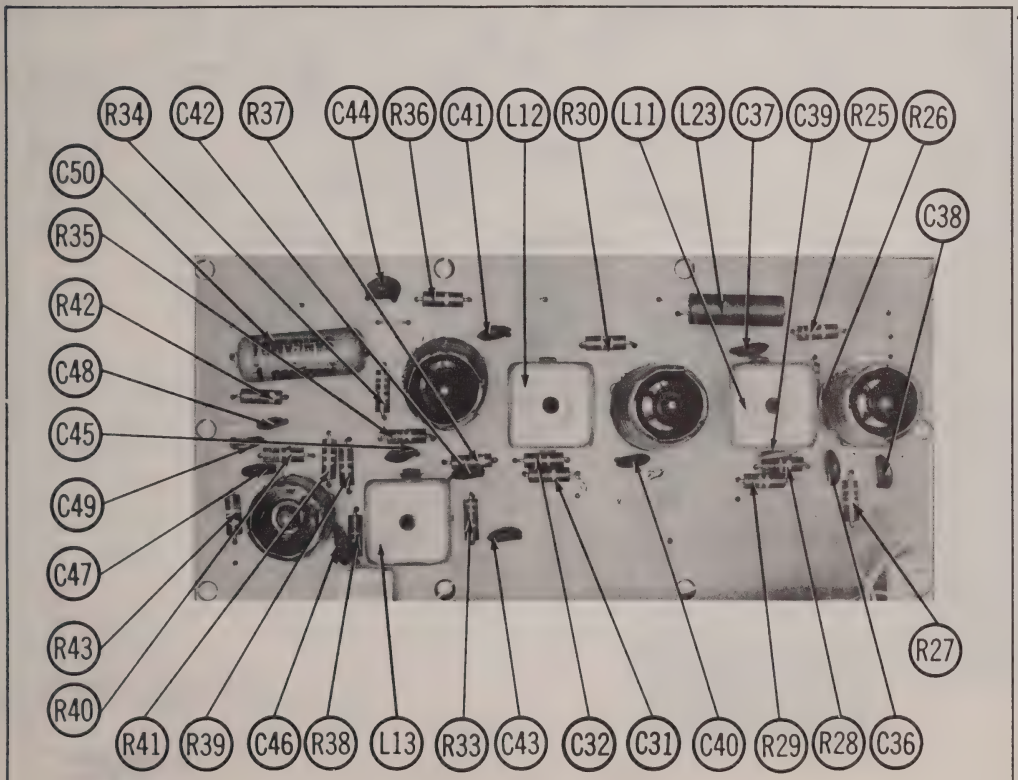
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

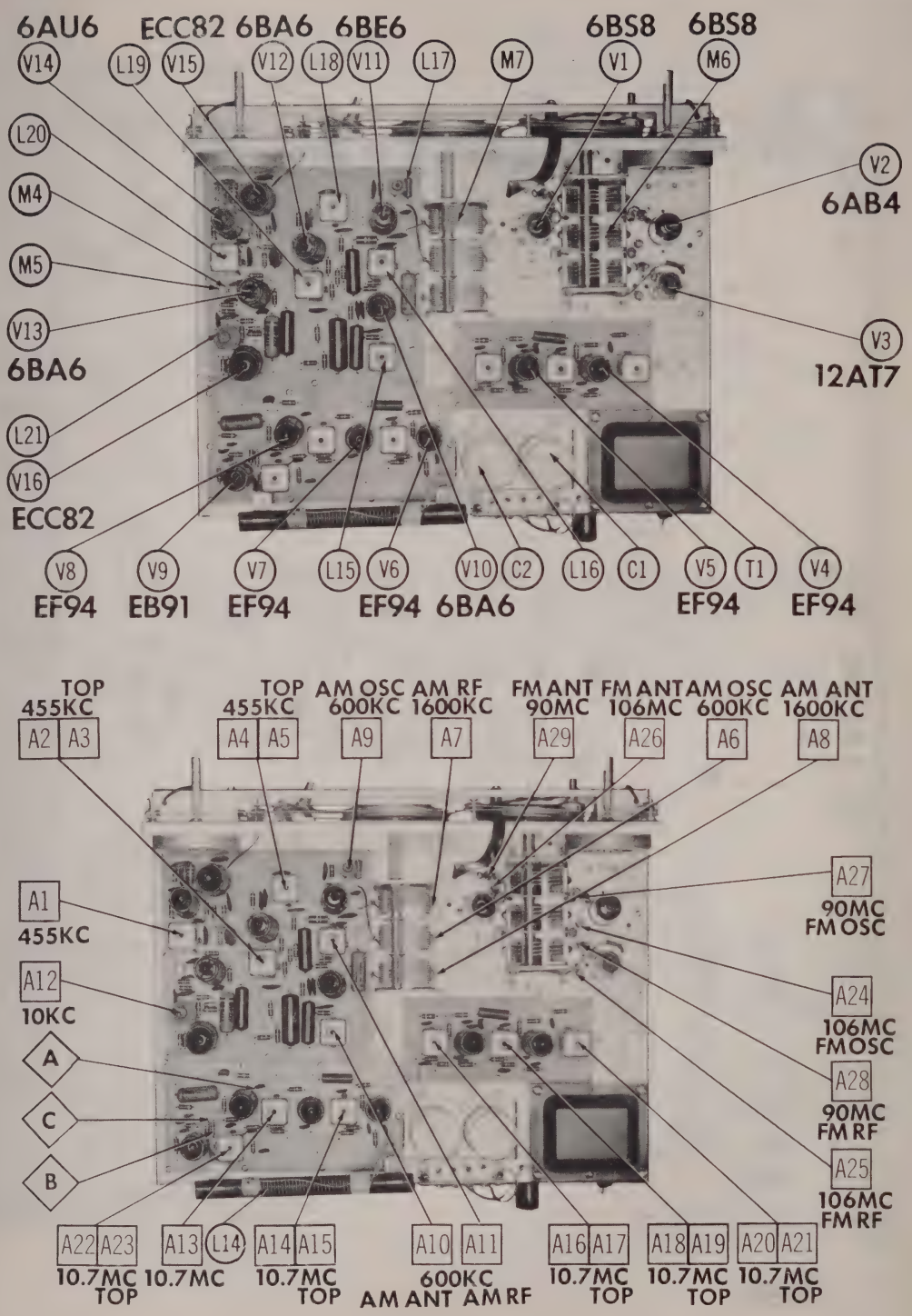
HEATH MODEL PT-1, W-PT-1



FM IF PRINTED BOARD



FM LIMITER-DETECTOR - PRINTED BOARD



CHASSIS-TOP VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Suggested Alignment Tools: A1 thru A5, A9 thru A23. . . GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A6, A7, A8, A24, A25, A26. . GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A27, A28, A29. . . . . GENERAL CEMENT #8721, 8722
WALSCO #2519

AM ALIGNMENT — SELECTOR IN AM POSITION

AM Band Switch to Narrow.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to RF stator lug of AM tuning gang. Low side to chassis.	455KC (400~ 30% AM)	(AM) Tuning gang fully open.	Use tuning meter.	A1, A2, A3, A4, A5	Adjust for deflection on tuning meter.
2.	Loop	1600KC	1600KC	"	A6, A7, A8	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC	"	A9, A10, A11	"
4.	High side thru .1mfd to pin 2 (grid) of AM Cathode Follower. Low side to chassis.	10KC		AC probe of VTVM across AM Output jack.	A12	Adjust for MINIMUM deflection.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side to ungrounded tube shield floating over FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe thru 100K to point (A) Common to chassis.	A13, A14, A15, A16, A17, A18, A19, A20, A21	Adjust for maximum deflection.
5.	"	"	"	DC probe thru 100K to point (B) Common to chassis.	A22	"
6.	"	"	"	DC probe to point (C). Common to chassis.	A23	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side to ungrounded tube shield floating over FM Mixer tube. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. thru 100K to point (A). Low side to chassis.	A13, A14, A15, A16, A17, A18, A19, A20, A21	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
5.	"	"	"	Vert. amp. thru 47K to point (B). Low side to chassis.	A22	"
6.	"	"	"	Vert. amp. to point (C). Low side to chassis.	A23	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A22 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals with 150Ω in each lead.	106MC (Unmod.)	(FM) 106MC	DC probe thru 100K to point (A) Common to chassis.	A24, A25, A26	Adjust for maximum deflection.
8.	"	90MC	90MC	"	A27, A28, A29	"

FIG. 1

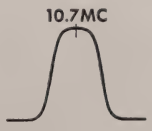


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	FM RF Amplifier	6BS8 (6BZ7) *
V2	FM Mixer	6AB4
V3	FM Osc.-FM AFC	12AT7
V4	1st FM IF Amplifier	EF94/6AU6
V5	2nd FM IF Amplifier	EF94/6AU6
V6	3rd FM IF Amplifier	EF94/6AU6
V7	1st FM Limiter	EF94/6AU6
V8	2nd FM Limiter	EF94/6AU6
V9	Discriminator	EB91/6AL5
V10	AM RF Amplifier	6BA6
V11	AM Converter	6BE6
V12	1st AM IF Amplifier	6BA6
V13	2nd AM IF Amplifier	6BA6
V14	AVC Amplifier	6AU6
V15	AVC Rect.-Tuning Ind. Amp.	ECC82/12AU7
V16	FM Cath. Follower-AM Cath. Follower	ECC82/12AU7

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA HEATH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲50	200	25-58	AFH2-33	B0260	FP240	TMD-2655	TVL-2576	
B	▲50	200							
C2A	▲100	250	25-70	AFH3-25-50	C0194	FP326.62	TMT-3304	TVL-3583	
B	■40	250							
C	▲40	200							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3								
C4	6.8 NPO 10%		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C5	180		DI-180	DD-181	L10T18	CCD-181	B-318	10TS-T18
C6	180		DI-180	DD-181	L10T18	CCD-181	B-318	10TS-T18
C7	180		DI-180	DD-181	L10T18	CCD-181	B-318	10TS-T18
C8	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C9	180		DI-180	DD-181	L10T18	CCD-181	B-318	10TS-T18
C10								
C11	6.8 NPO 10%		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C12	47 N750 5%			DTN-47	C10Q47U	CCTN-470	CN7-547	10TCU-Q47
C13	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C14	5 NPO 10%		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C15	22 NPO 5%			DTZ-22	C10Q22C	CCTO-220	CNO-422	10TCC-Q22
C16	10 NPO 5%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C17								
C18	180		DI-180	DD-181	L10T18	CCD-181	B-318	10TS-T18
C19	2000		BPD-002	DD-102	BYA10D2	CCD-202	B-220	5HK-D20
C20	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C21	2.2 NPO +.25mmf		NPO-DI 2.2	DTZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C22	5 NPO 10%		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C23	180		DI-180	DD-181	L10T18	CCD-181	B-318	10TS-T18
C24	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C25	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C26	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C27	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C28	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C29	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C30	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C31	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C32	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C33	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C34	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C35	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C36	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C37	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C38	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C39	27 NPO 10%		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C40	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C41	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C42	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C43	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C44	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C45	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C46	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C47	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C48	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C49	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C50	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C51	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C52	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C53	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C54	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C55	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C56	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C57	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C58	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C59	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C60	10 N750 10%		N750-S1 10	DTN-10	C10Q1U	CCTN-100	CN7-410	10TCU-Q10
C61	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C62	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C63	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C64	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C65	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C66	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C67	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C68	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C69	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C70	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C71	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C72	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C73	10 NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C74	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C75	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C76	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C77	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C78	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C79	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C80	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C81	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C82	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C83	27 NPO 10%		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C84	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C85	.01 50V 10%		V84C2S1-10%		PM6S1	1DP-1-103		2WF-S10
C86	3000 10%		DI-3000		PM6D3	CCD-302	JL-233	10TS-D30
C87	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C88	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA HEATH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	15K	½	10-78	B-20	A47-15K-S	B11-118		FM Level
B	Shaft			Not Req.	FKS-1/4	SK2		
R2A	15K	½	10-78	B-20	A47-15K-S	B11-118		AM Level
B	Shaft			Not Req.	FKS-1/4	SK2		

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	2200Ω 1W			
R4	6800Ω 1W			
R5	150Ω			
R6	1500Ω			
R7	150Ω			
R8	22K			

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R9	100Ω			
R10	270K			
R11	27K 1W			(47K) *
R12	270Ω			
R13	100Ω			
R14	150Ω			
R15	56K			
R16	820Ω			
R17	100K			
R18	2.2meg			
R19	100Ω			
R20	390Ω			
R21	56K			
R22	820Ω			
R23	100K			
R24	4.7meg			
R25	390Ω			
R26	39K			
R27	270Ω			
R28	100K			
R29	12meg			
R30	100K			
R31	1meg			
R32	150K			
R33	6800Ω			
R34	47K			
R35	33K			
R36	100Ω			
R37	56K			
R38	100K			
R39	100K			
R40	100K			
R41	150K			
R42	2.2meg			
R43	220K			
R44	82Ω			
R45	330K			
R46	1000Ω			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R47	82K			
R48	270Ω			
R49	82Ω			
R50	330K			
R51	27K			
R52	1000Ω			
R53	15K 1W			
R54	560Ω			
R55	330K			
R56	1000Ω			
R57	82K			
R58	1500Ω			
R59	560Ω			
R60	560Ω			
R61	330K			
R62	6800Ω			
R63	56K			
R64	1000Ω			
R65	560Ω			
R66	150K			
R67	27K			
R68	4700Ω			
R69	27K 1W			
R70	82K			
R71	390Ω			
R72	1.5meg			
R73	1.5meg			
R74	270K			
R75	4700Ω			
R76	100K			
R77	470K			
R78	1500Ω			
R79	470K			
R80	1500Ω			
R81	6800Ω			
R82	220Ω 2W			
R83	210Ω 7W	PW10-210	10W-SQ-210	

* Alternate Value

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: HEATH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	FM Ant.	40-150					
L2	RF Choke (1uh)	45-38	BC-561	4602	RTC-8515	T855	
L3	RF Choke (2.5uh)	45-39	SW-630	4606	RTC-8517	T857	
L4	FM RF	40-151					
L5	FM Oscillator	40-152					
L6	RF Choke (2.5uh)	45-39	SW-630	4606	RTC-8517	T857	
L7	RF Choke (2.5uh)	45-39	SW-630	4606	RTC-8517	T857	
L8	1st FM IF	52-21	FM-256	1463-PC	RTC-9046	T654	
L9	2nd FM IF	52-22	FM-256	1463-PC	RTC-9046	T654	
L10	3rd FM IF	52-22	FM-256	1463-PC	RTC-9046	T654	
L11	4th FM IF	52-23	FM-256	1463-PC	RTC-9046	T654	
L12	Limiter	40-134					
L13	Discriminator	53-3					
L14	Loopstick	40-130	BC-419	705-A		T532	
L15	AM Ant.	40-131					
L16	AM RF	40-132					
L17	AM Oscillator	40-129					
L18	1st AM IF	52-18					
L19	2nd AM IF	52-19	BC-356	13-PC1	RTC-8641	T646	
L20	3rd AM IF	52-20					
L21	10KC Filter	40-133					
L22	Fil. Choke (1.7uh)	45-35	BC-562	4604	RTC-8516	T856	
L23	Fil. Choke (1.7uh)	45-35	BC-562	4604	RTC-8516	T856	
L24	FM Line Ant.	40-149					

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: HEATH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V@ .58A	80V@ .400A AC	6.3V@ 5A	54-70					

POWER RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: HEATH PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.100A	57-23	1N1763	2F4	SR200	
M2	.100A	57-23	1N1763	2F4	SR200	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: HEATH PART No. FUSE	HEATH PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M3	3AG	1½A 250V	421-1	423-1	31201.5 (3AG 1½A 250V)	342001	AGC 1½	HKP

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: HEATH PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M4	1N264	56-4		1N264	1N264	AM Detector (Pigtail)
M5	1N264	56-4		1N264	1N264	AM Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	HEATH PART No.	NOTES
M6	Tuning Cap.	26-51	FM, 3 Gang
M7	Tuning Cap.	26-47	AM, 3 Gang
M8	Switch	63-161	Band Selector (Rotary Wafer Type)
M9	Switch	63-185	AFC (Rotary Wafer Type)
M10	Switch	63-160	Broad-Narrow, AM Band (Rotary Wafer Type)
M11	Switch	63-184	Power Off-On
M12	Meter	407-52	Tuning

CABINETS & CABINET PARTS

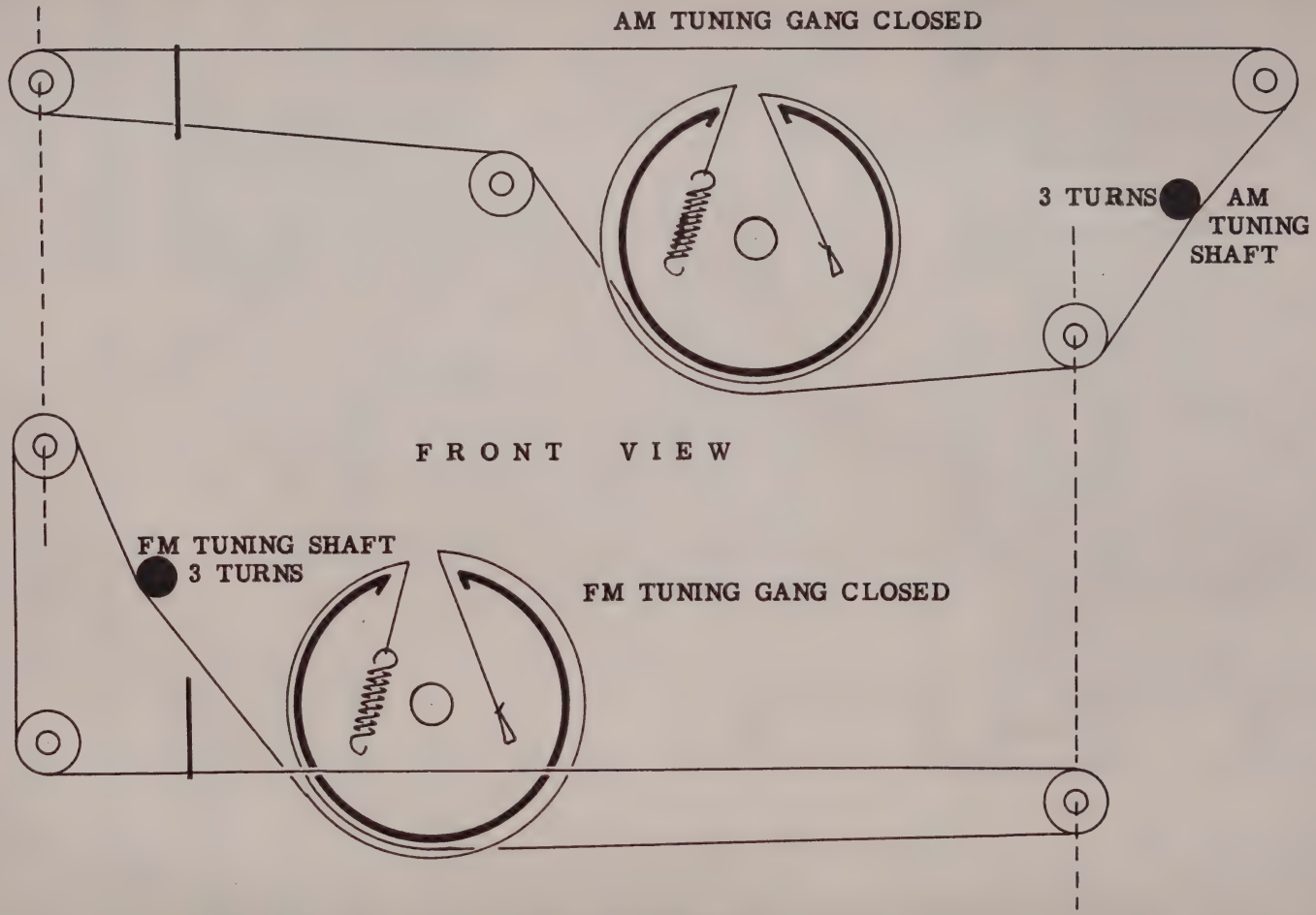
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Pointer	463-17	FM, AM
Knob	462-68	Tuning
Knob	462-69	On-Off, AFC, Band, Function

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

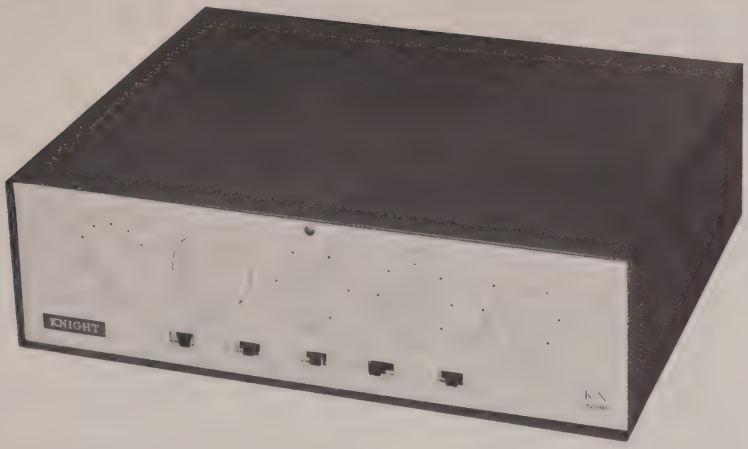


DIAL CORD STRINGING

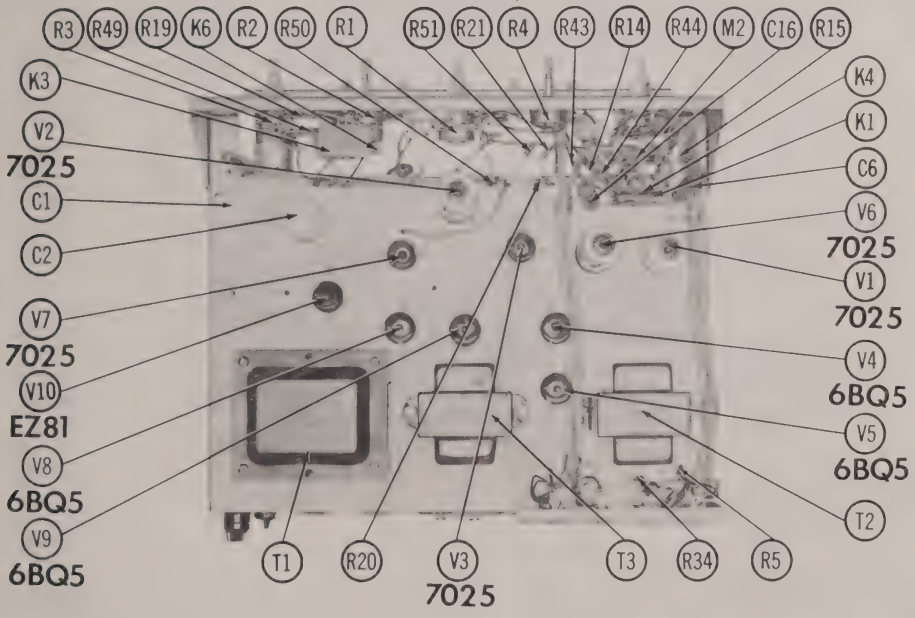
PHOTOFACT® Folder

KNIGHT MODEL KN-728B (35DU775)

KNIGHT MODEL
KN-728B (35DU775)



TRADE NAME	Knight Model KN-728B (35DU775)
SUPPLIER	Allied Radio Corp., 100 N. Western Ave., Chicago 80, Illinois
TYPE SET	AC Operated 10 Tube Stereo Amplifier
POWER SUPPLY	110 — 120 Volts AC, 60 Cycles RATING 105 Watts, .92 Amp. @117 Volts AC



KNIGHT MODEL
KN-728B (35DU775)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KV627

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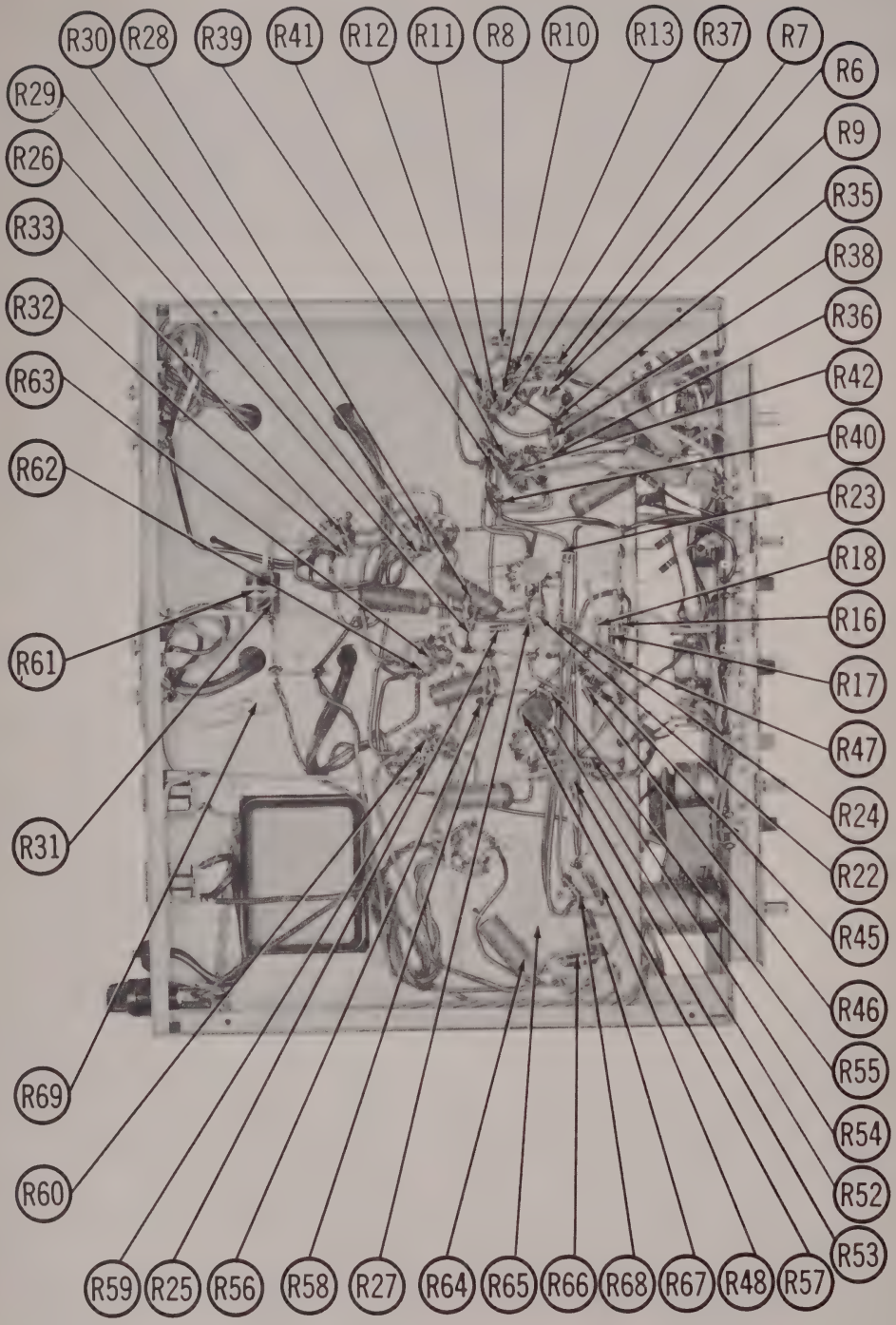
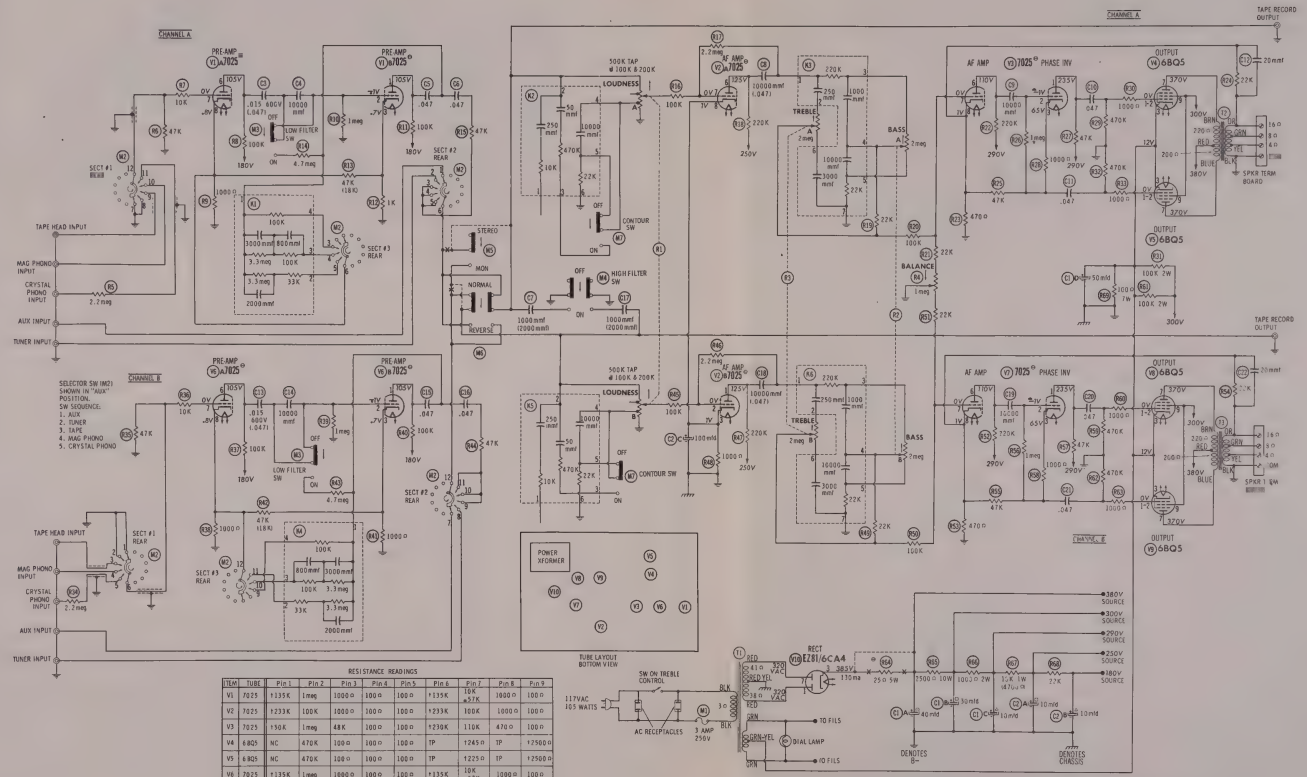
SET 543 FOLDER 12



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	7025	†135K	1meg	1000Ω	100Ω	100Ω	†135K	10K ±5%	1000Ω	100Ω
V2	7025	†233K	100K	1000Ω	100Ω	100Ω	†233K	100K	1000Ω	100Ω
V3	7025	†50K	1meg	48K	100Ω	100Ω	†230K	110K	470Ω	100Ω
V4	6BQ5	NC	470K	100Ω	100Ω	100Ω	TP	†245Ω	TP	†250Ω
V5	6BQ5	NC	470K	100Ω	100Ω	100Ω	TP	†225Ω	TP	†250Ω
V6	7025	†135K	1meg	1000Ω	100Ω	100Ω	†135K	10K ±5%	1000Ω	100Ω
V7	7025	†50K	1meg	48K	100Ω	100Ω	†230K	110K	470Ω	100Ω
V8	6BQ5	NC	470K	100Ω	100Ω	100Ω	TP	†245Ω	TP	†250Ω
V9	6BQ5	NC	470K	100Ω	100Ω	100Ω	TP	†225Ω	TP	†250Ω
V10	1/2 6CA4	38Ω	NC	¶ 50K	100Ω	100Ω	NC	41Ω	NC	TP

ALL MEASUREMENTS MADE IN "AUX" OR "TUNER" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
■ MEASURED IN ANY POSITION OTHER THAN "AUX" OR "TUNER".
→ MEASURED FROM CATHODE.
↑ MEASURED FROM PIN 3 OF V10.
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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KNIGHT MODEL KN-7288 (35DU75)

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	Channel A Preamp.	7025 (12AX7) *
V2	Channel A AF Amp. - Channel B AF Amp.	7025 (12AX7) *
V3	Channel A AF Amp. - Channel A Phase Inv.	7025 (12AX7) *
V4	Channel A Output	6BQ5
V5	Channel A Output	6BQ5
V6	Channel B Preamp.	7025 (12AX7) *
V7	Channel B AF Amp. - Channel B Phase Inv.	7025 (12AX7) *
V8	Channel B Output	6BQ5
V9	Channel B Output	6BQ5
V10	Rectifier	EZ81/6CA4

* Alternate

ELECTROLYTIC CAPACITORS

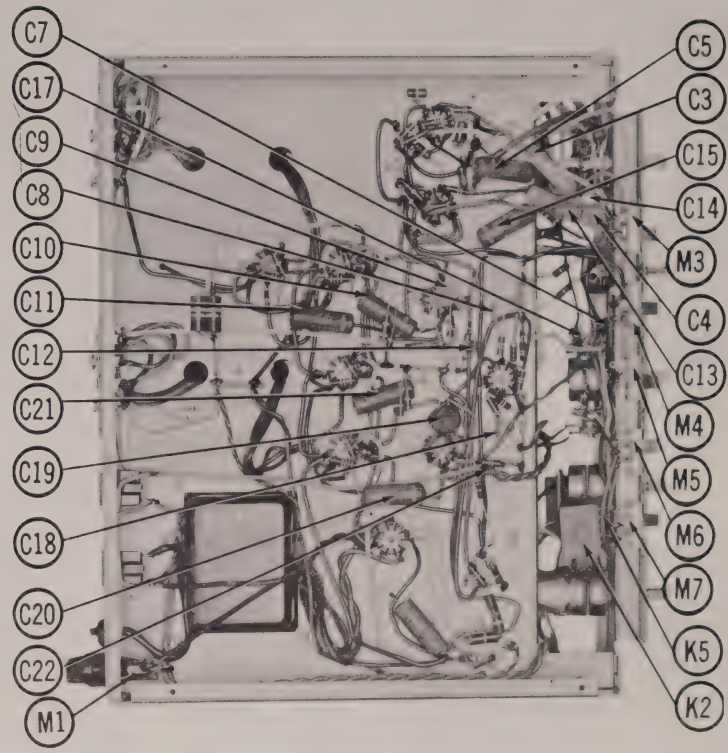
ITEM No.	RATING CAP.	RATING VOLT.	KNIGHT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▰40	400		AFH4-77	D0630	FP436	TMQ-4541	TVL-4705.8	
B	■30	350							
C	▲10	300							
D	50	25							
C2A	■10	350		AFH3-155-15	C0773	FP387.1	TMT-3349	TVL-3633.3	
B	▲10	250							
C	100	15							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.015 600V	(.047) †	P688N-015	DD-153	CUB6S15	6DP-2-153	GEM-6115	6TM-S15
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C5	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C6	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C7	1000	(2000) †	BPD-001	DD-102	BYA1GD1	CCD-102	B-210	5HK-D10
C8	10000	(.047) †	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C11	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C12	20		S1 20	D6-200	L10Q2	CCD-200	GP420	10TS-Q20
C13	.015 600V	(.047) †	P688N-015	DD-153	CUB6S5	6DP-2-153	GEM-6115	6TM-S15
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C15	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C16	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C17	1000	(2000) †	BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C18	10000	(.047) †	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C19	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C20	.047 400V		P488N-047	DD-503	CUBA8S47	4DP-3-473	GEM-4147	4TM-S47
C21	.047 400V		P488N-047	DD-503	CUBA8S47	4DP-3-473	GEM-4147	4TM-S47
C22	20		SI 20	D6-200	L10Q2	CCD-200	GP420	10TS-Q20

† Alternate Value.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	KNIGHT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K *	½	LCK-500K-S	BT-160			FB55DT25	Loudness, Channel A
B	500K *	½		STR-160			RU55DT25	Loudness, Channel B
C	Shaft			Not Req.			CS3500	
R2A	2meg	½	TCK-2M-S	B-76	AD47-2meg-Z		FA26A	Bass, Channel A
B	2meg	½		SR-76	Not Req.		RU26A	Bass, Channel B
C	Shaft			Not Req.	KSS-3		CS3500	
R3A	2meg	½	TCK-2MS-WS	B-76	AD47-2meg-Z		FA26A	Treble, Channel A
B	2meg	½		SR-76	Not Req.		RU26A	Treble, Channel B
C	Shaft			Not Req.	KSS-3		CS3500	
D	Switch			KR-1	SWE-12		U841	Power Off-On
R4A	1meg	½	TCK-1M	B-69	A47-1meg-S	Q11-137	U54	Balance
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

* Taps at 100K & 200K. (200K tap not used)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R5	2.2meg				R38	1000Ω			
R6	47K				R39	1meg			
R7	10K				R40	100K			
R8	100K				R41	1000Ω			
R9	1000Ω				R42	47K			(18K) *
R10	1meg				R43	4.7meg			
R11	100K				R44	47K			
R12	1000Ω				R45	100K			
R13	47K			(18K) *	R46	2.2meg			
R14	4.7meg				R47	220K			
R15	47K				R48	1000Ω			
R16	100K				R49	22K			
R17	2.2meg				R50	100K			
R18	220K				R51	22K			
R19	22K				R52	220K			
R20	100K				R53	470Ω			
R21	22K				R54	22K			
R22	220K				R55	47K			
R23	470Ω				R56	1meg			
R24	22K				R57	47K			
R25	47K				R58	1000Ω			
R26	1meg				R59	470K			
R27	47K				R60	1000Ω			
R28	1000Ω				R61	100K 2W			
R29	470K				R62	470K			
R30	1000Ω				R63	1000Ω			
R31	100K 2W				R64	25Ω 5W	PW5-25	5W-SQ-25	Note 1
R32	470K				R65	2500Ω 10W	PW10-2500	10W-SQ-2500	
R33	1000Ω				R66	1000Ω 2W			
R34	2.2meg				R67	10K 1W			(4700) *
R35	47K				R68	22K			
R36	10K				R69	100Ω 7W	PW10-100	10W-SQ-100	
R37	100K								

* Alternate.
Note 1. Not used in some versions.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	KNIGHT PART No.	REPLACEMENT DATA
K1	Selector Sw. Comp.	800mmf, 2000mmf, 3000mmf, 33K, (2) 100K, 3.3meg	PC-1960	
K2	Contour Sw. Comp.	50mmf, 250mmf, 10000mmf, 10K, 22K, 470K	PC-1963	
K3	Tone Comp.	250mmf, 1000mmf, 3000mmf, 10000mmf, 22K, 220K	PC-1961	
K4	Selector Sw. Comp.	800mmf, 2000mmf, 3000mmf, 33K, (2) 100K, 3.3meg	PC-1960	
K5	Contour Sw. Comp.	50mmf, 250mmf, 10000mmf, 10K, 22K, 470K	PC-1963	
K6	Tone Comp.	250mmf, 1000mmf, 3000mmf, 10000mmf, 22K, 220K	PC-1961	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	KNIGHT PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V Ⓐ .92A	640VCT Ⓐ .130A DC	6.3VCT Ⓐ 5.5A	TP-13L		PM-8422			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	KNIGHT PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	8500Ω CT	16Ω Tap Ⓐ 8Ω, 4Ω	TO-10C				S-28X	
T3	8500Ω CT	16Ω Tap Ⓐ 8Ω, 4Ω	TO-10C				S-28X	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			KNIGHT PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	3A 250V			312003 (3AG 3A 250V)	342001	AGC 3	HKP

MISCELLANEOUS

ITEM No.	PART NAME	KNIGHT PART No.	NOTES
M2	Switch		Function Selector (Rotary Wafer Type)
M3	Switch		Lo-Filter (Slide Type DPDT Slide Type)
M4	Switch		Hi-Filter (Slide Type DPDT Slide Type)
M5	Switch		Stereo-Mono (Slide Type SPDT Slide Type)
M6	Switch		Normal-Reverse (Slide Type DPDT Slide Type)
M7	Switch		Contour (Slide Type DPDT Slide Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder with CIRCUITRACE®

KOWA MODEL KT-67

KOWA MODEL KT-67

TRADE NAME	Kowa Model KT-67		
SUPPLIER	Longwood Radio Distributors, Inc., 1261 Broadway, Suite 704, New York 1, N. Y.		
TYPE SET	Battery Operated Transistorized Portable AM Receiver		
POWER SUPPLY	9 Volts DC	RATING	6MA @ 9 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	540 — 1600KC		15MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3, A5...GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A4, A6.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	1400KC Signal.	"	A6	Adjust for maximum output. Repeat steps 2, 3 and 4.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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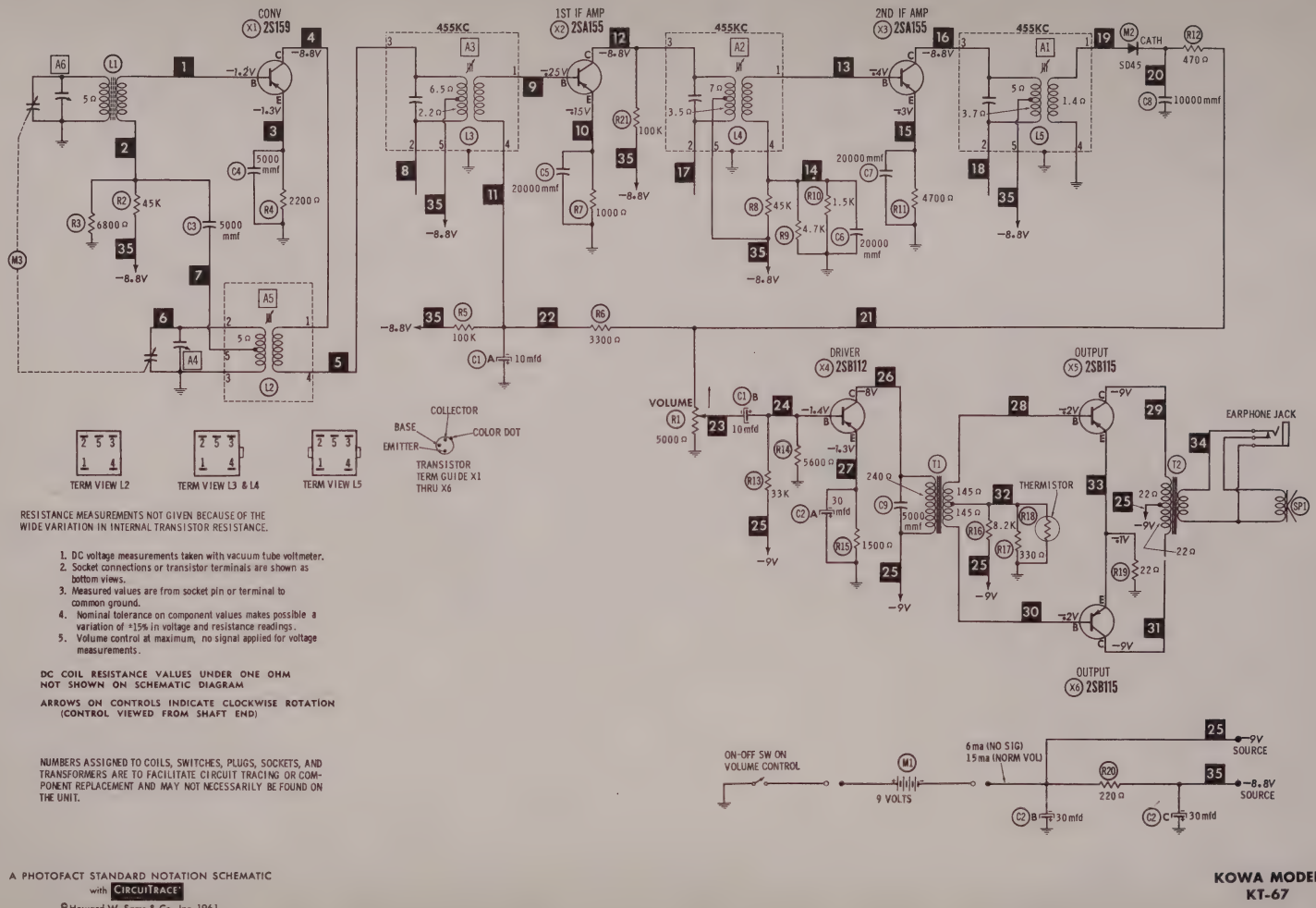
KF609

SET 543 FOLDER 13



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE®

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KOWA MODEL KT-67

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2SJ59	Converter	2N406			PNP
X2	2SA155	1st IF Amplifier				PNP
X3	2SA155	2nd IF Amplifier				PNP
X4	2SB112	Driver				PNP
X5	2SB115	Output				PNP
X6	2SB115	Output				PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	KOWA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	10	6							
B	10	6							
C2A	30	10							
B	30	10							
C	30	10							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	5000		C80V502AM	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C4	5000		C80V502AM	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C5	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C6	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C7	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C8	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C9	5000		C80V502AM	DM-502	H-05D5	CCD-502	TA-250	TG-D50

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	KOWA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/10						Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	45K				R12	470Ω			
R3	6800Ω				R13	33K			
R4	2200Ω				R14	5600Ω			
R5	100K				R15	1500Ω			
R6	3300Ω				R16	8200Ω			
R7	1000Ω				R17	330Ω			
R8	45K				R18	Temp. Comp.			
R9	4700Ω				R19	22Ω			
R10	1500Ω				R20	220Ω			
R11	4700Ω				R21	100K			

PRINTED BOARD

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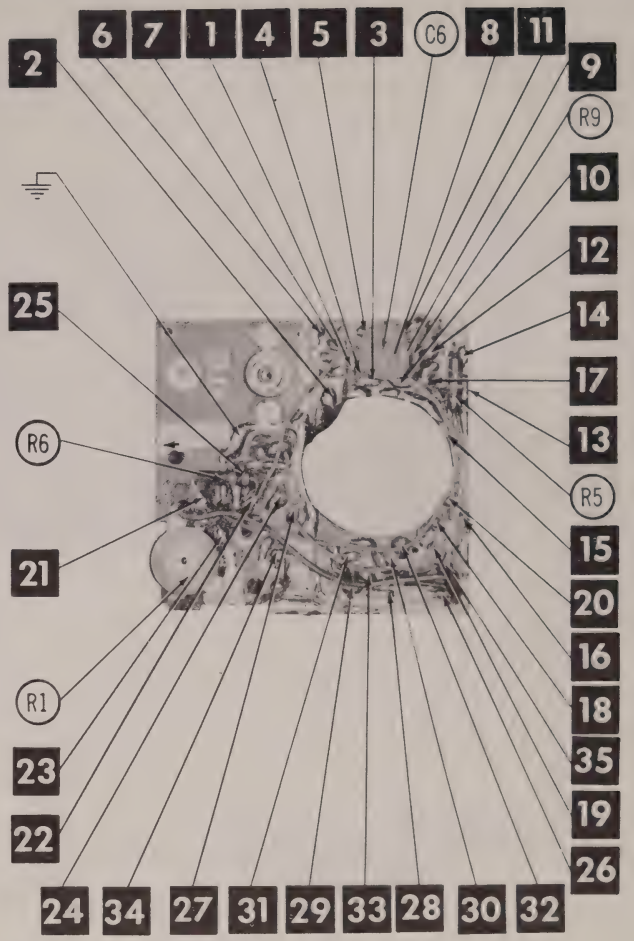


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		KOWA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1 L2 L3 L4 L5	Loopstick Oscillator 1st IF 2nd IF 3rd IF						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	KOWA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.8	1	G-410					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	KOWA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	400Ω CT	6-8Ω	X-411					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	KOWA PART No.	QUAM PART No.	
SP1	2"	PM	6-8Ω			

BATTERIES

ITEM No.	VOLTAGE	KOWA PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	006P		2U6		216		M-1604	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		KOWA PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	SD45			1N60	1N60	Detector (Pigtail)

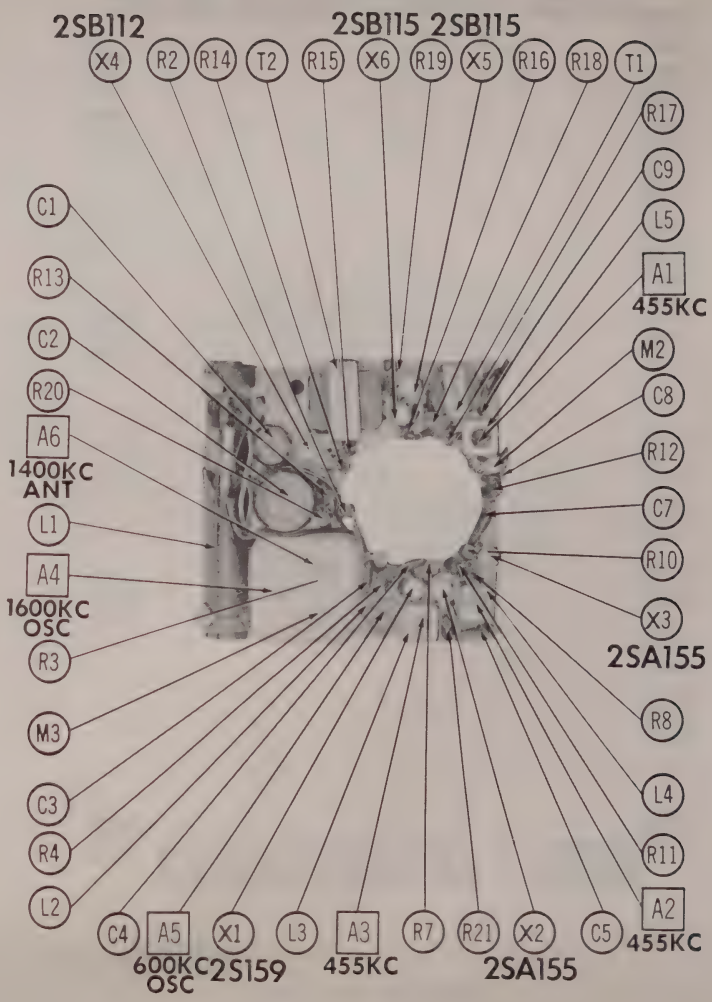
MISCELLANEOUS

ITEM No.	PART NAME	KOWA PART No.	NOTES
M3	Tuning Cap.		2 Gang

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

MELODIC MODEL GT-586

MELODIC MODEL
GT-586

TRADE NAME	Melodic Model GT-586
IMPORTER	Longwood Radio Distributors, Inc., 1261 Broadway, Suite 704, New York 1, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC
RATING	6MA @ 9 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	540 — 1610KC
	15MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3, A5.... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A4, A6..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400% 30% AM)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	1400KC Signal.	"	A6	Adjust for maximum output. Repeat Steps 2, 3 and 4.

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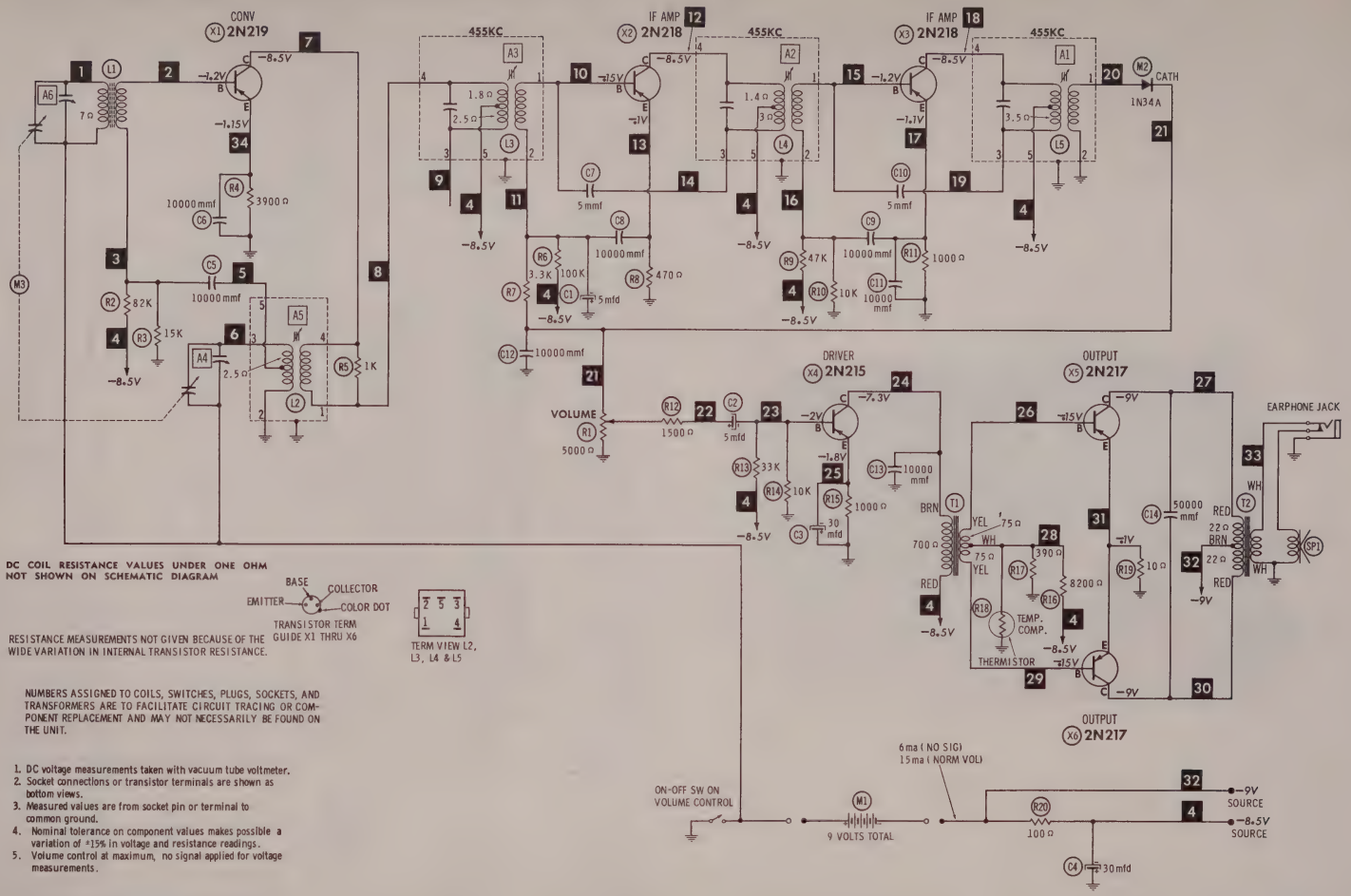

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

BASE, COLLECTOR, EMITTER, COLOR DOT

TRANSISTOR TERM GUIDE X1 THRU X6

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

TERM VIEW L2, L3, L4 & L5

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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MELODIC MODEL GT-586

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N219	Converter	2N219	2N486	2N219	PNP
X2	2N218	1st IF Amplifier	2N218	2N483	2N218	PNP
X3	2N218	2nd IF Amplifier	2N218	2N483	2N218	PNP
X4	2N215	Driver	2N215	2N362	2N104	PNP
X5	2N217	Output	2N217	2N361	2N217	PNP
X6	2N217	Output	2N217	2N361	2N217	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	MELODIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	5	3		PTT-4	NLW5-15	TT6X5	MLV5-3	TE-1052.2	
C2	5	3		PTT-4	NLW5-15	TT6X5	MLV5-3	TE-1052.2	
C3	30	3		PTT-10	NLW30-6	TT6X30	MLV30-6	TE-1092	
C4	30	10		PTT-43	NLW30-15	TT15X30	MLV35-15	TE-1158	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C6	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C7	5		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C8	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C9	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C10	5		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C11	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C12	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C13	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C14	50000		C80V503AM	DA-503	H-05S5		TA-150	TG-S50

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MELODIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/10						Volume & Switch

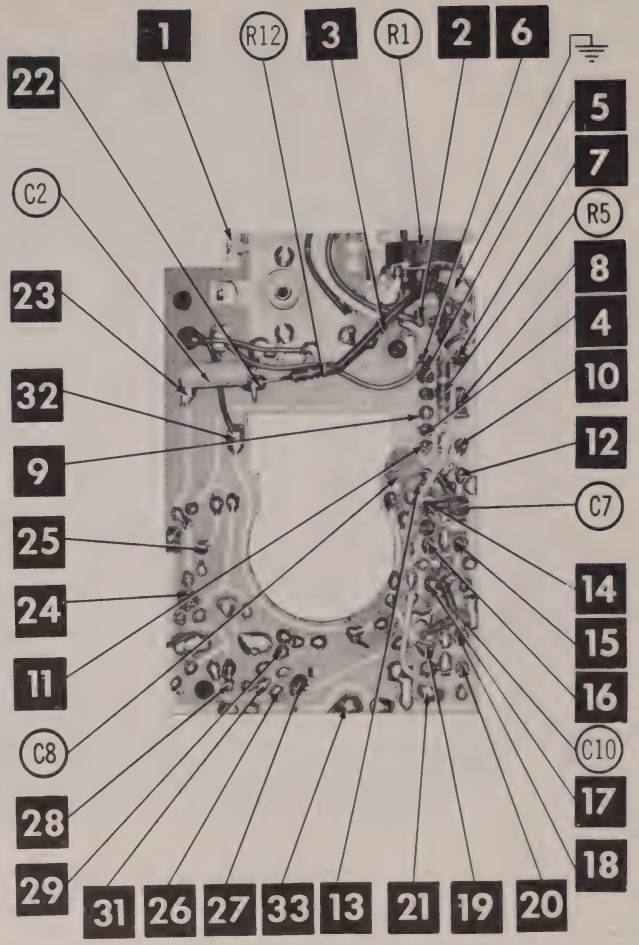
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	82K				R12	1500Ω			
R3	15K				R13	33K			
R4	3900Ω				R14	10K			
R5	1000Ω				R15	1000Ω			
R6	100K				R16	8200Ω			
R7	3300Ω				R17	390Ω			
R8	470Ω				R18	Temp. Comp.			
R9	47K				R19	10Ω			
R10	10K				R20	100Ω			
R11	1000Ω								

PRINTED BOARD

A Howard W. Sams CIRCUITRACE® Photo



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MELODIC PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick						
L2	Osc.						
L3	1st IF						
L4	2nd IF						
L5	3rd IF						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MELODIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.7	1						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MELODIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	700Ω CT	6-8Ω			TA-25①	TR-104①		① Use 8Ω Sec. Tap

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MELODIC PART No.	QUAM PART No.	
SP1	2½"	PM	6-8Ω			

BATTERIES

ITEM No.	VOLTAGE	MELODIC PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	006P		2U6		216		M-1604	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		MELODIC PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N34A			1N34A	1N34A	Detector (Pigtail)

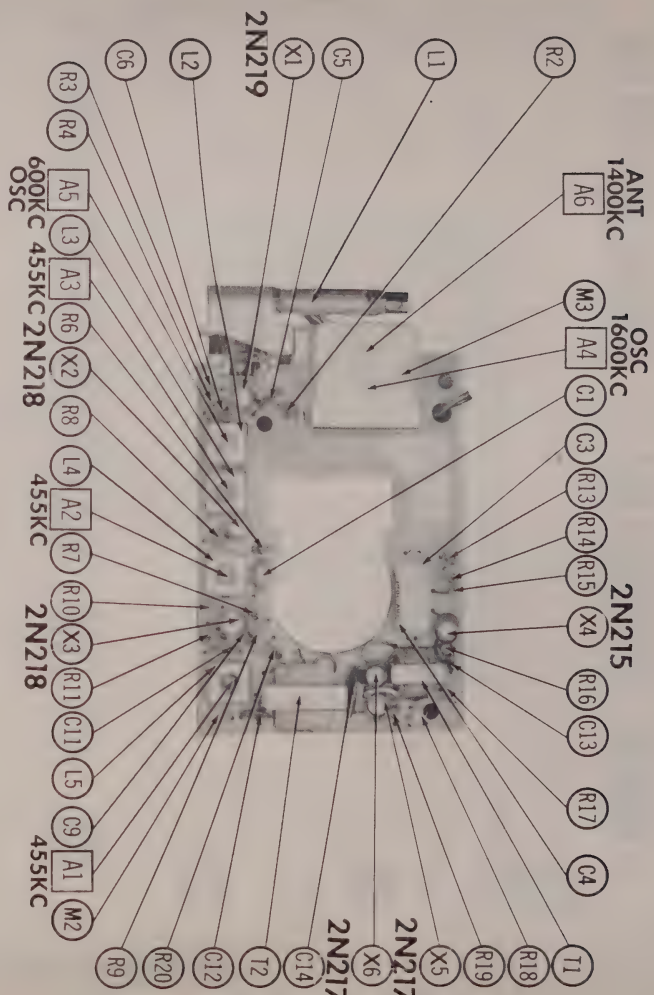
MISCELLANEOUS

ITEM No.	PART NAME	MELODIC PART No.	NOTES
M3	Tuning Cap.		2 Gang

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder

**PHILCO MODEL
J-1720R**

PHILCO MODEL
J-1720R

PHILCO MODEL
J-1720R

TRADE NAME	Philco Model J-1720R
MANUFACTURER	Philco Corp., Tioga & C Streets, Philadelphia, Pa.
TYPE SET	AC Operated 13 Tube Stereo Phono Amplifier With Reverberation Unit and 4 Speed Automatic Record Changer
POWER SUPPLY	105 — 120 Volts AC, 60 Cycles RATING 100 Watts, .9 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER M-47 — SEE SIMILAR GLASER STEERS GS-77 (Revised) — PHOTOFACT SET 482 FOLDER 11

SET 543 FOLDER 15

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KT648

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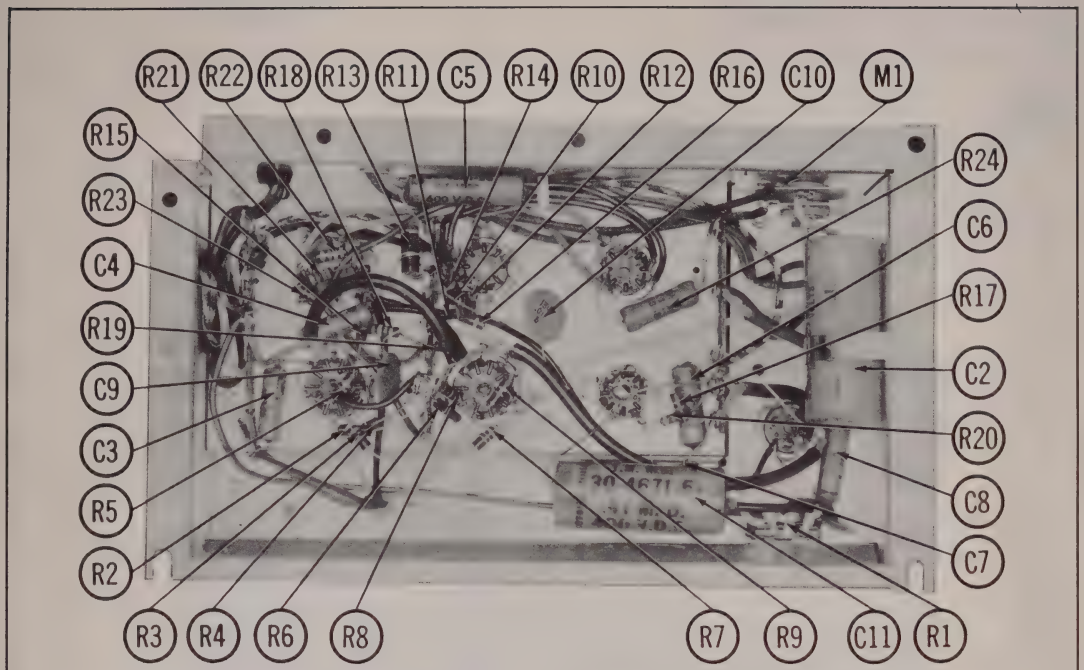
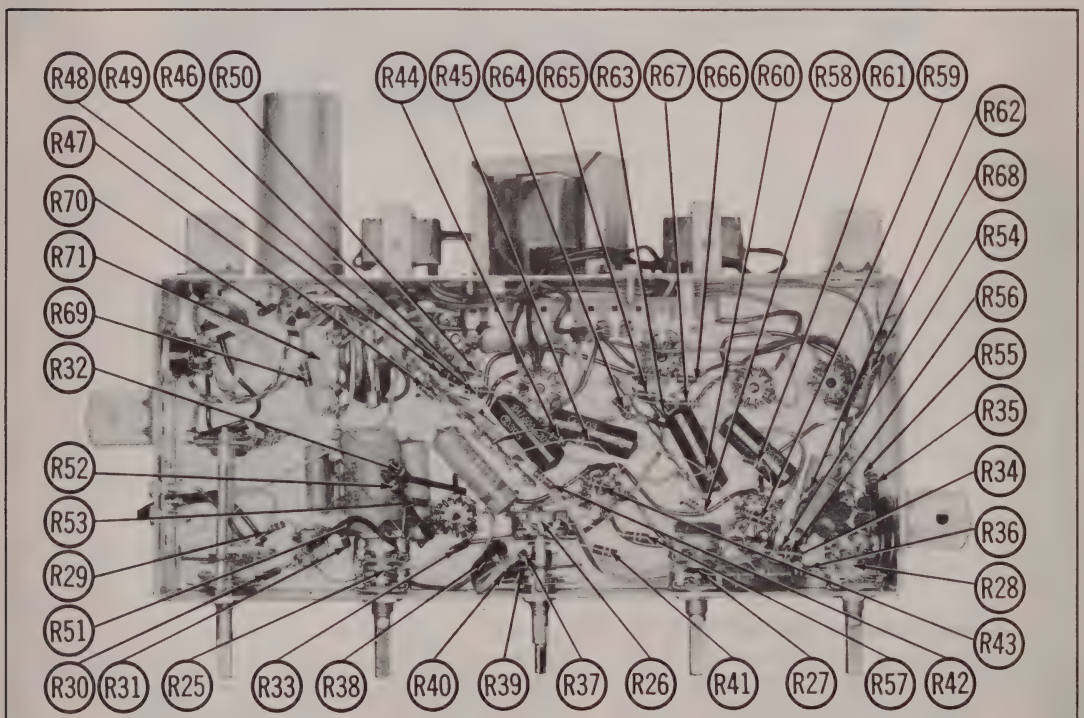
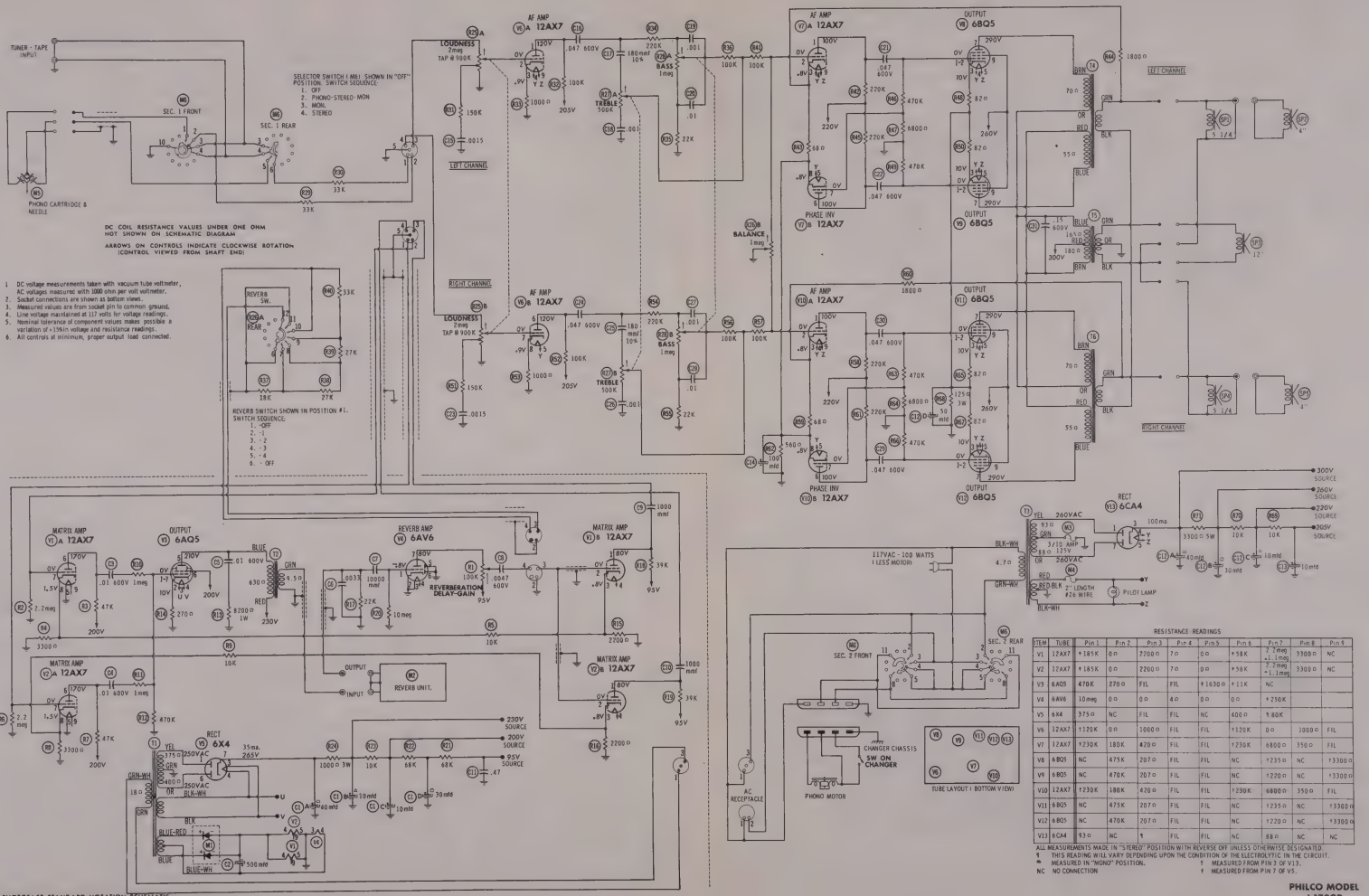


REVERBERATION CHASSIS-BOTTOM VIEW



AMP CHASSIS BOTTOM VIEW-RESISTOR IDENT.


TUNER - TAPE INPUT
PHONO CARTRIDGE & NEEDLE
SEC. 1 FRONT
SEC. 1 REAR
SELECTOR SWITCH I MBI SHOWN IN "OFF" POSITION. SWITCH SEQUENCE:
1. OFF
2. PHONO-STEREO-MON
3. MON.
4. STEREO
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.
REVERB SWITCH SHOWN IN POSITION #1. SWITCH SEQUENCE:
1. -OFF
2. -1
3. -2
4. -3
5. -4
6. -OFF
LOUDNESS 2 meg TAP @ 100K
LEFT CHANNEL
RIGHT CHANNEL
AF AMP V6A 12AX7
AF AMP V6B 12AX7
BASS 1 meg
TREBLE 500K
BALANCE 1 meg
PHASE INV V7B 12AX7
OUTPUT V8 6BQ5
OUTPUT V9 6BQ5
PHASE INV V10B 12AX7
OUTPUT V11 6BQ5
OUTPUT V12 6BQ5
MATRIX AMP V1A 12AX7
MATRIX AMP V2A 12AX7
MATRIX AMP V1B 12AX7
MATRIX AMP V2B 12AX7
OUTPUT V3 6AQ5
REVERB AMP V4 6AV6
REVERBERATION DELAY-GAIN
REVERB UNIT.
RECT V5 6X4
RECT V13 6CA4
117VAC - 100 WATTS (LESS MOTOR)
PILOT LAMP
AC RECEPTACLE
PHONO MOTOR
CHANGER CHASSIS
SW ON CHANGER
TUBE LAYOUT (BOTTOM VIEW)
300V SOURCE
260V SOURCE
220V SOURCE
205V SOURCE
230V SOURCE
200V SOURCE
95V SOURCE
LEFT CHANNEL
RIGHT CHANNEL

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†185K Ω	0 Ω	7200 Ω	7 Ω	0 Ω	†58K	7 meg ±1.1 meg	3300 Ω	NC
V2	12AX7	†185K Ω	0 Ω	2200 Ω	7 Ω	0 Ω	†58K	7 meg ±1.1 meg	3300 Ω	NC
V3	6AQ5	470K	270 Ω	FIL	FIL	†1630 Ω	†11K	NC		
V4	6AV6	10 meg	0 Ω	0 Ω	4 Ω	0 Ω	0 Ω	†250K		
V5	6X4	375 Ω	NC	FIL	FIL	NC	400 Ω	†80K		
V6	12AX7	†120K Ω	0 Ω	1000 Ω	FIL	FIL	†120K	0 Ω	1000 Ω	FIL
V7	12AX7	†230K	180K	420 Ω	FIL	FIL	†230K	6800 Ω	350 Ω	FIL
V8	6BQ5	NC	475K	207 Ω	FIL	FIL	NC	†235 Ω	NC	†3300 Ω
V9	6BQ5	NC	470K	207 Ω	FIL	FIL	NC	†220 Ω	NC	†3300 Ω
V10	12AX7	†230K	180K	420 Ω	FIL	FIL	†230K	6800 Ω	350 Ω	FIL
V11	6BQ5	NC	475K	207 Ω	FIL	FIL	NC	†235 Ω	NC	†3300 Ω
V12	6BQ5	NC	470K	207 Ω	FIL	FIL	NC	†220 Ω	NC	†3300 Ω
V13	6CA4	93 Ω	NC	¶	FIL	FIL	NC	88 Ω	NC	NC

ALL MEASUREMENTS MADE IN "STEREO" POSITION WITH REVERSE OFF UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
* MEASURED IN "MONO" POSITION.
NC NO CONNECTION
† MEASURED FROM PIN 3 OF V13.
† MEASURED FROM PIN 7 OF V5.

PHILCO MODEL J-1720R

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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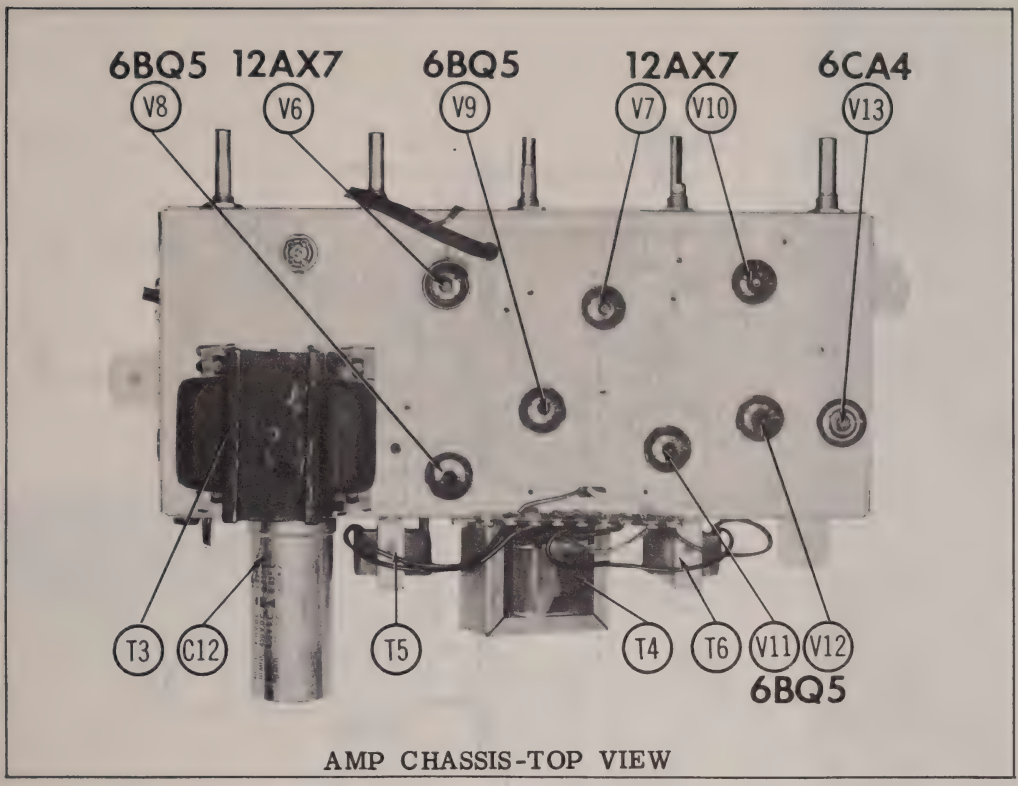
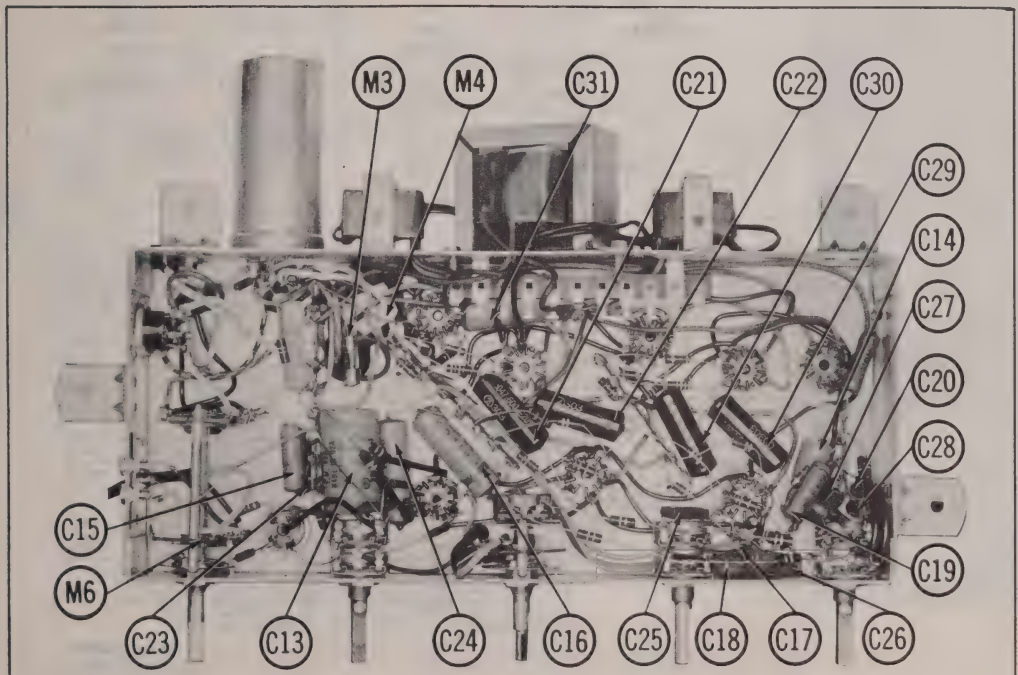


AMP CHASSIS-TOP VIEW



AMP CHASSIS BOTTOM VIEW-CAPACITOR & MISC. IDENT.

REVERBERATION PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Left Channel Matrix Amp.	12AX7
V2	Right Channel Matrix Amp.	12AX7
V3	Output	6AQ5
V4	Reverb Amp.	6AV6
V5	Rectifier	6X4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	350	30-2601-11	AFH4-06-25	D0032	FP428	TMQ-4295	TVL-4635	
B	▲10	350							
C	10	350							
D	■30	350							
C2	500	25	30-2596-7	PRS1290	BR5002	TC2505	TD-500-25	TVA-1209	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.01 600V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10
C4	.01 600V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10
C5	.01 600V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10
C6	.0033 400V		P488N-0033	D6-332	6DP-1-332	6DP-1-332	GEM-6233	6TM-D33
C7	10000		BPD-01	DD-103	BYA108I	CCD-103	B-110	5HK-S10
C8	.0047 600V		P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C9	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C10	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C11	.47 400V		P488N-47		CUB4P47	4DP-6-474	GEM-4047	4TM-P47

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	100K	½	33-5572-49	TT-40	B47-100K-S	B11-128	PTA15L	Reverberation Delay-Gain
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	2.2meg			
R3	47K			
R4	3300Ω			
R5	10K			
R6	2.2meg			
R7	47K			
R8	3300Ω			
R9	10K			
R10	1meg			
R11	1meg			
R12	470K			
R13	8200Ω 1W			
R14	270Ω			
R15	2200Ω			
R16	2200Ω			
R17	22K			
R18	39K			
R19	39K			
R20	10meg			
R21	68K			
R22	68K			
R23	10K			
R24	1000Ω 3W	PW3-1000	3G-1000	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	RATING SEC. 4	RATING SEC. 5	REPLACEMENT DATA PHILCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V Ⓐ .25A	500VCT Ⓐ .035A DC	6.3V Ⓐ 1A	32VCT Ⓐ .300A DC			32-8966-1					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA PHILCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	15	1	32-8965-1					

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA PHILCO PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.300A	34-8052-1		3N33-1C1-RV		Dual Selenium, Common Cathode

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M2	Reverb Unit	76-12127-1	Housing & Coil Assembly

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

AMP PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V6	Left Channel AF Amp. - Right Channel AF Amp.	12AX7
V7	Left Channel AF Amp. - Left Channel Phase Inv.	12AX7
V8	Left Channel Output	6BQ5
V9	Left Channel Output	6BQ5
V10	Right Channel AF Amp. - Right Channel Phase Inv.	12AX7
V11	Right Channel Output	6BQ5
V12	Right Channel Output	6BQ5
V13	Rectifier	6CA4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C12A	▲40	450	30-2584-36	AFH4-85-25	D0655	FP431.3	TMQ-4586	TVL-4746	
B	■30	450							
C	▲10	450							
D	50	50							
C13	10	450	30-2417-34	PRS1720	BR1045	TC72	TD-10-450	TVA-1705	
C14	100	6	30-2588-5	PRS1100	BBR100-6	TC2501	TD-100-6	TVA-1101	

FIXED CAPACITORS

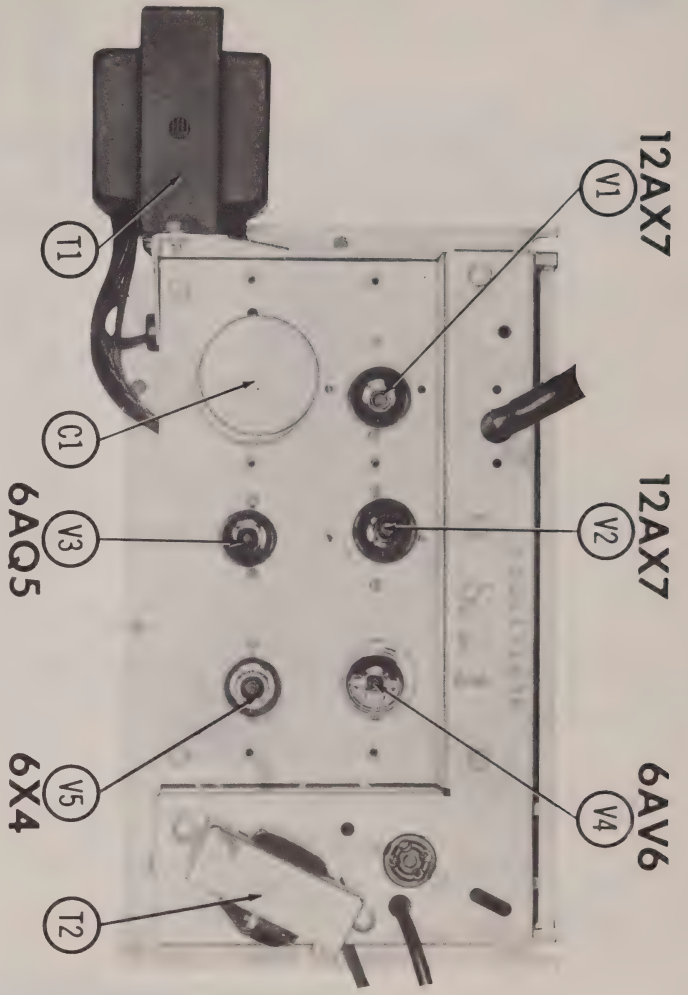
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C15	.0015 400V		P488N-0015	D6-152	CUB6D15	6DP-1-152	GEM-6215	6TM-D15
C16	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C17	180 10%		1469-00018	TCZ-180	22R5T18	CM-19B-181K	CNO-318	MS-318
C18	.001 400V		P488N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C19	.001 400V		P488N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C20	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C21	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C22	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C23	.0015 400V		P488N-0015	D6-152	CUB6D15	6DP-1-152	GEM-6215	6TM-D15
C24	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C25	180 10%		1469-00018	TCZ-180	22R5T18	CM-19B-181K	CNO-318	MS-318
C26	.001 400V		P488N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C27	.001 400V		P488N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C28	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C29	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C30	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C31	.15 600V		P688N-15		CUB6P15	6DP-5-154	GEM-6015	6TM-P15

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R25A	2meg	1/2	33-5573-58	BT-82			FB26T75	Loudness, Left Channel
	900K Tap							
B	2meg	1/2		STR-82			RU26T75	Loudness, Right Channel
	900K Tap							
C	Shaft			Not Req.			CS3500	
R26A	Switch		33-5602-1					Reverberation
B	1meg	1/2						Balance
R27A	500K	1/2	33-5573-60	B-59	AD47-500K-S		FA55L	Treble, Left Channel
B	500K	1/2		SR-59	Not Req.		RU55L	Treble, Right Channel
C	Shaft			Not Req.	FS-3		CS3500	
R28A	1meg	1/2	33-5573-59	B-70	AD47-1meg-Z		FA16 A	Bass, Left Channel
B	1meg	1/2		SR-70	Not Req.		RU16A	Bass, Right Channel
C	Shaft			Not Req.	FS-3		CS3500	

REVERBERATION CHASSIS—TOP VIEW



AMP PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: WORKMAN TV PART No.	REMARKS
R29	33K			
R30	33K			
R31	150K			
R32	100K			
R33	1000Ω			
R34	220K			
R35	22K			
R36	100K			
R37	18K			
R38	27K			
R39	27K			
R40	33K			
R41	100K			
R42	220K			
R43	68Ω			
R44	1800Ω			
R45	220K			
R46	470K			
R47	6800Ω			
R48	82Ω			
R49	470K			
R50	82Ω			
R51	150K			
R52	100K			
R53	1000Ω			
R54	220K			
R55	22K			
R56	100K			
R57	100K			
R58	220K			
R59	68Ω			
R60	1800Ω			
R61	220K			
R62	560Ω			
R63	470K			
R64	6800Ω			
R65	82Ω			
R66	470K			
R67	82Ω			
R68	125Ω 3W	PW3-125	3G-125Ω	
R69	10K			
R70	10K			
R71	3300Ω 5W	PW5-3300	5W-SQ-3300	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	REPLACEMENT DATA: PHILCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T3	117V @ .65A	520VCT @ .100A DC	6.3VCT @ 5A	32-8967-1					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: PHILCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	2600Ω CT	6-8Ω CT	32-8968-1				S-54Z	
T5	PRI. 1 1400Ω PRI. 2 1400Ω	6-8Ω	32-8969-1					
T6	PRI. 1 1400Ω PRI. 2 1400Ω	6-8Ω	32-8969-1					

SPEAKER

ITEM No.	TYPE: SIZE	TYPE: FIELD	TYPE: V. C. IMP.	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	5 1/4"	PM	14-16Ω	36-1669-21	52A1Z16	
SP2	4"	PM	14-16Ω	36-1673-11	4A15Z16	
SP3	12"	PM	14-16Ω	36-1678-5	12A4AZ16	
SP4	5 1/4"	PM	14-16Ω	36-1669-21	52A1Z16	
SP5	4"	PM	14-16Ω	36-1673-11	4A15Z16	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: PHILCO PART No. FUSE	PHILCO PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M3	3AG	3/10A 125V P/T S/B	45-2656-64		315,300 (3/10A 125V) S/B P/T		MDV 3/10	
M4	2" #26 Wire		L3477					

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	PHILCO PART No. CARTRIDGE	PHILCO PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M5	325-8047-1	325-8232S* (LP) 325-8233 * (78RPM)	17D	Not Req.	26S	S1-1 * S3-3 *	8TA4-S	N-8TA-S *	

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M6	Switch	42-2128-1	Function (Rotary Wafer Type)

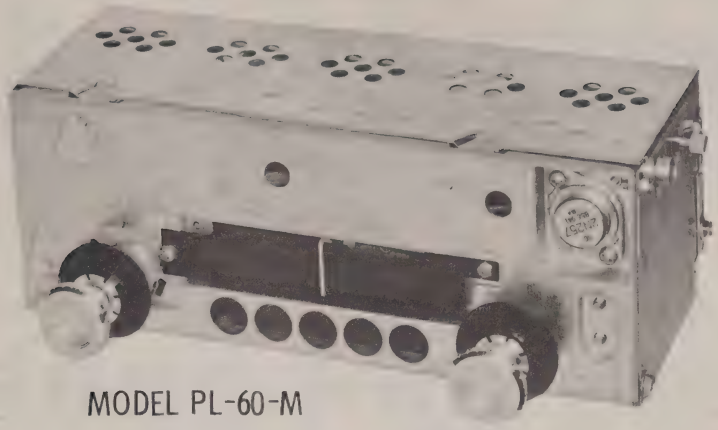
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	28-11588-4	Loudness, Bass, Treble, Function Selector
Knob	28-11588-5	Reverb
Knob	54-5617-3	Balance

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1785-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



MODEL PL-60-M

STROMBERG-CARLSON MODELS
PL-60-M, VA-60-M

TRADE NAME	Stromberg-Carlson Models PL-60-M (For 1960 Plymouths), VA-60-M (For 1960 Valiants)
MANUFACTURER	Stromberg-Carlson Co., A Div. of General Dynamics Corp., Commercial Products Div., 1400 N. Goodman Street, Rochester 9, N. Y.
TYPE SET	Battery Operated 2 Tube, 2 Transistor Custom Built AM Automobile Receiver
POWER SUPPLY	12 Volt Storage Battery
TUNING RANGE—BROADCAST	540 – 1600KC RATING 1.2 Amp. @ 12.6 Volts DC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6.....GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 9 (grid) of Converter. Low side to chassis.	262.5KC (400~ 30% AM)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Antenna receptacle thru dummy (Fig. 1).	1610KC	"	"	A5, A6	"
3.	"	1200KC	1200KC Signal.	"	A7	"

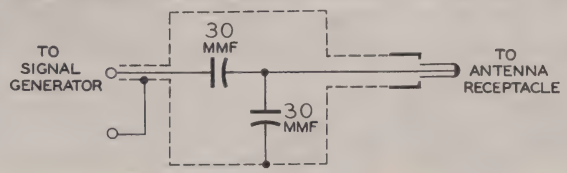
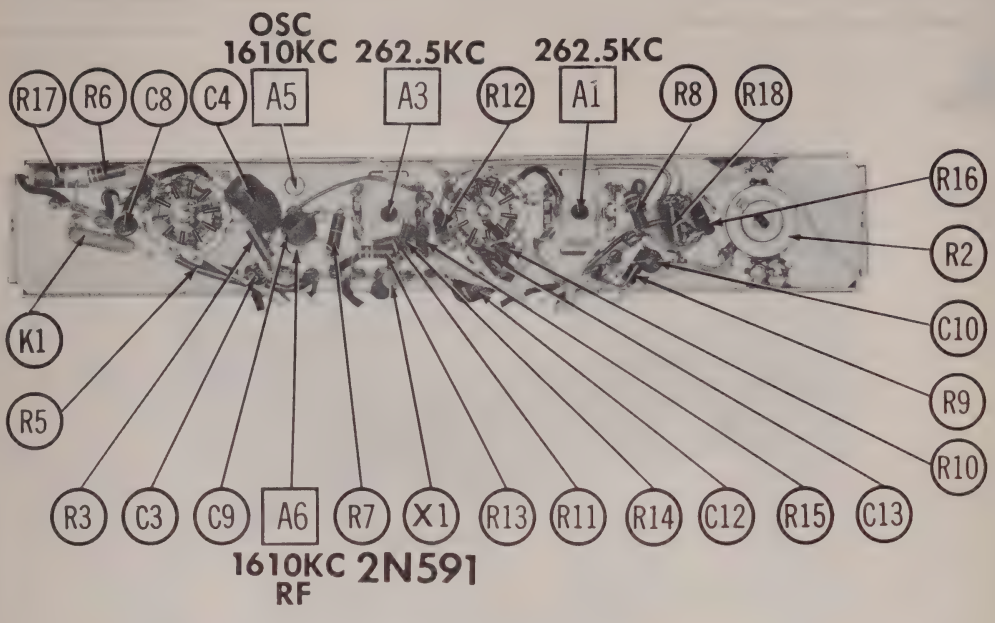


FIG. 1

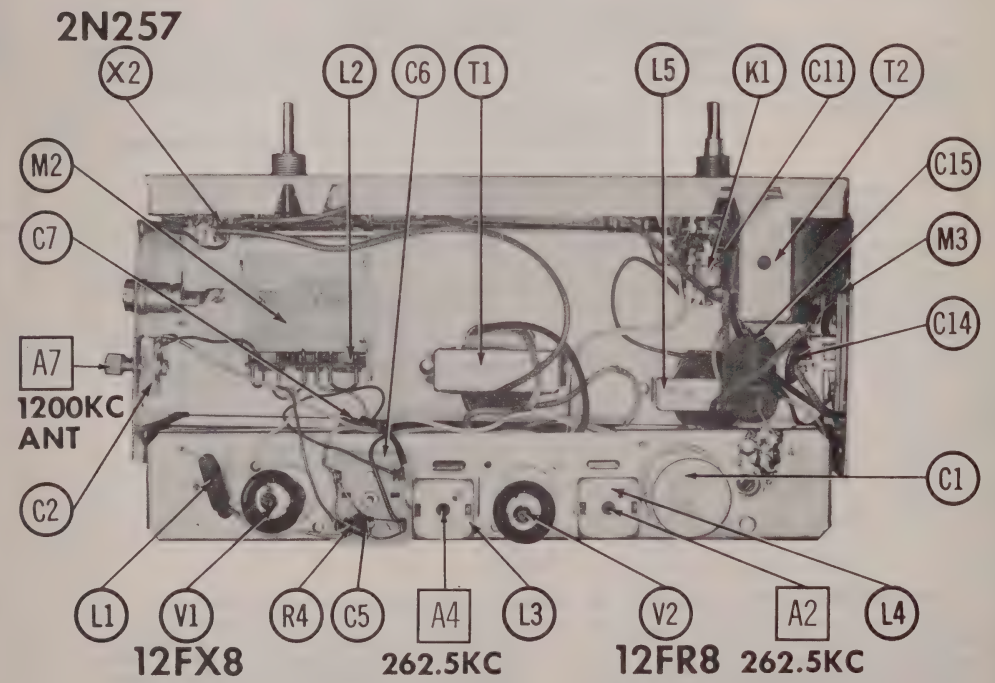
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

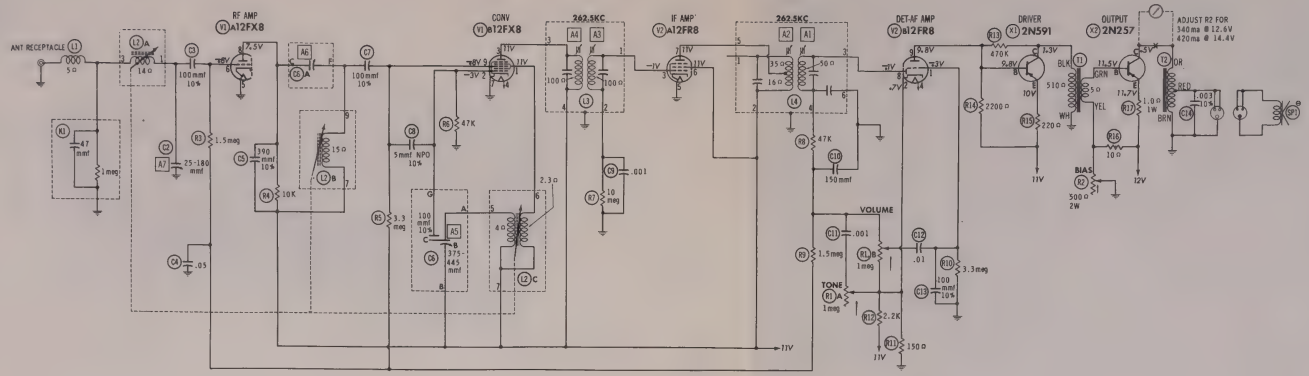
KD619

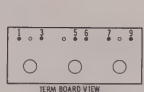


CHASSIS-BOTTOM VIEW



CHASSIS-TOP VIEW





NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

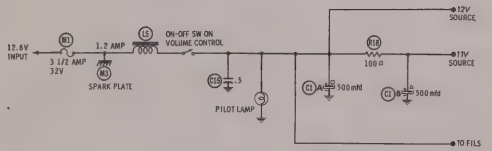
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12FX8	100 Ω	47K	200 Ω	FIL	FIL	4 meg	0 Ω	10K	5.8 meg
V2	12FR8	3.3 meg	150 Ω	10 meg	FIL	FIL	100 Ω	115 Ω	1 meg	

TRANSISTOR CIRCUIT RESISTANCE FOR X1 AND X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.



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STROMBERG-CARLSON MODELS PL-60-M, VA-60-M

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	• GENERAL ELECTRIC • USE	TYPE	ITEM No.	• RAYTHEON • USE	• SYLVANIA • TYPE
V1	RF Amp.-Converter	12FX8	V2	IF Amp.-Det.-AF Amp.	12FR8

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA: RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
X1	2N591	Driver	2N591	2N573	2N591	PNP
X2	2N257	Output			2N155	PNP Note 1

Note 1. When replacing, apply silicone grease (General Cement Part #8101 or equivalent) to both sides of insulator. Tighten mounting screws securely. Check bias adjustment.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: Stromberg-Carlson PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■500	16	111000-080	AFH3-00-95	B0043	WP200.6		TVLS-2157 *	
B	▲500	16							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	25-180	#110000-013				463		
C3	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C4	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C5	390 10%		DI-390	DD-391	L10T39	CCD-391	GP339	10TS-T39
C6A								
B	375-445	#110000-004						
C	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C7	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C8	5 NPO 10%		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C9	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C10	150		DI-150	DD-151	L10T15	CCD-151	B-315	10TS-T15
C11	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C12	.01 200V		P288N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C13	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T1
C14	.003 10%		DI-3000		PM6D3	CCD-302	JL-233	10TS-D30
C15	.5 50V		P288N-5			1DP-4-504	GEM-205	2TM-P5

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Stromberg-Carlson PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg		145000-102					Tone
B	1meg							Volume
C	Switch							Power Off-On
C2	500Ω	2(WW)	145000-089		39-500	112-500	FL-500	Bias

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	1.5meg			
R4	10K			
R5	3.3meg			
R6	47K			
R7	10meg			
R8	47K			
R9	1.5meg			
R10	3.3meg			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R11	150Ω			
R12	2200Ω			
R13	470K			
R14	2200Ω			
R15	220Ω			
R16	10Ω			
R17	1.0Ω 1W			
R18	100Ω			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Stromberg-Carlson PART No.	REPLACEMENT DATA
K1	Antenna Filter	47mmf, 1meg	179000-035	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: Stromberg-Carlson PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	RF Choke(32uh)	114000-002	TV-180	9330-36	RTC-8593	T301	
L2A	Ant.						
B	RF						
C	Osc.						
L3	Input IF	114000-203	BC-350	42-H1	RTC-8638	T604	
L4	Output IF	114000-205	BC-318				

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ~	Stromberg-Carlson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L5	1.2A	.8Ω	.008HY	161000-001					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Stromberg-Carlson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	5.5	1.	161000-171					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA					NOTES
	PRI.	Stromberg-Carlson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	30Ω Tap @ 6-8Ω	161000-170					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Stromberg-Carlson PART No.	QUAM PART No.	
SP1	6"x 9"	PM	6-8Ω	155009-056* 155000-044 †	69A2Z8	* Model PL-60-M † Model VA-60-M

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Stromberg-Carlson PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	7½A 32V	128000-010	128000-001 128000-036 ♦	30707.5 (SFE 7½A 32V)	155009	SFE 7½	HHH

♦ Cap.

MISCELLANEOUS

ITEM No.	PART NAME	Stromberg-Carlson PART No.	NOTES
M2	Tuner Assy.	164000-028	Manual
M3	Spark Plate	110000-020	

CABINETS & CABINET PARTS

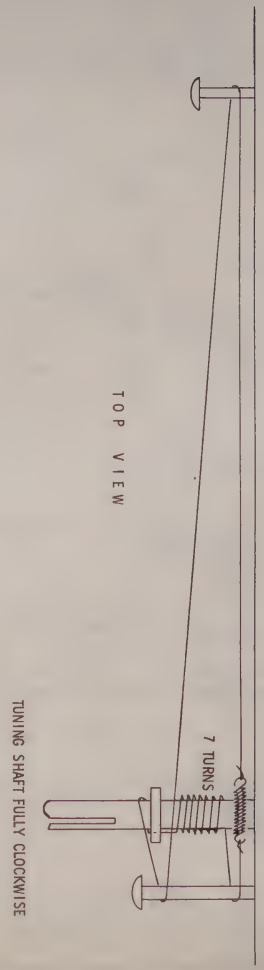
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial	151000-100	Background
Dial Glass	122000-068	
Dial Pointer	144000-013	
Knob	134000-099	Tuning, Volume
Knob	134000-100	Tone, Dummy

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661

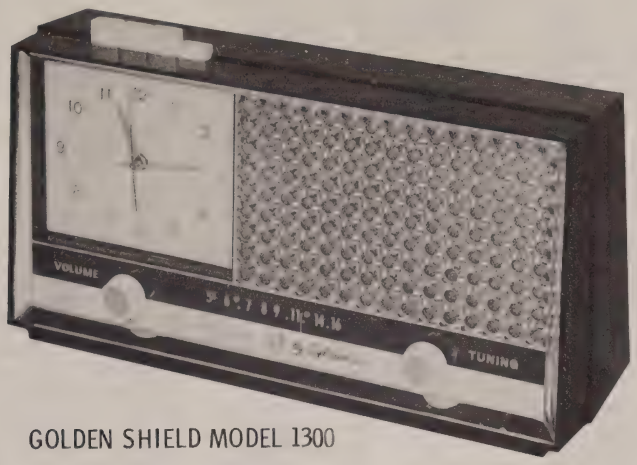
TUNING DRIVE CORD STRINGING



PHOTOFACT® Folder with CIRCUITRACE®

SYLVANIA, GOLDEN SHIELD CHASSIS 630-5, -6, -7, -8, -9, 651-1, -2, -3, -4

SYLVANIA, GOLDEN SHIELD CHASSIS 630-5, -6, -7, -8, -9, 651-1, -2, -3, -4



GOLDEN SHIELD MODEL 1300

SYLVANIA, GOLDEN SHIELD CHASSIS 630-5, -6, -7, -8, -9, 651-1, -2, -3, -4

TRADE NAME	Sylvania	Chassis	Model
		630-5	5T10B, 5T10P, 5T11B, 5T11T, 5T16B, 5T16T
		630-6	5C10B, 5C10P, 5C11B, 5C11T, 5C16B, 5C16T, 5C17B, 5C17T
		630-7	5T12R, 5T12T, 5T12W, 5T18
		630-8	5C12R, 5C12T, 5C12W, 5C18
	Golden Shield	Chassis	Model
		630-9	6010, 6011, 6018
		651-1	1600, 1701, 1704, 1708, 1709
		651-2	1400, 1512, 1519
		651-3	1100, 1111, 1160, 1212, 1219, 1286
		651-4	1300, 1301, 1306, 1309, 1322
MANUFACTURER	Sylvania Home Electronics, Div. of Sylvania Electric Products, Inc. 700 Ellicott Street, Batavia, N. Y.		
TYPE SET	AC Operated 5 Tube AM Receiver With Electric Clock (Models with Chassis 630-5, 630-7, 630-9, 651-1, 651-2 do not include clock.)		
POWER SUPPLY	110 — 120 Volts AC, 60 Cycles RATING 20 Watts, .2 Amp. @117 Volts AC (Less Clock)		
TUNING RANGE	540 — 1650KC		

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4....GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A7.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A6.....GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC	"	A6	"
4.	"	1400KC	1400KC Signal.	"	A7	Adjust for maximum output. Repeat Steps 2, 3 and 4.

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The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KG592

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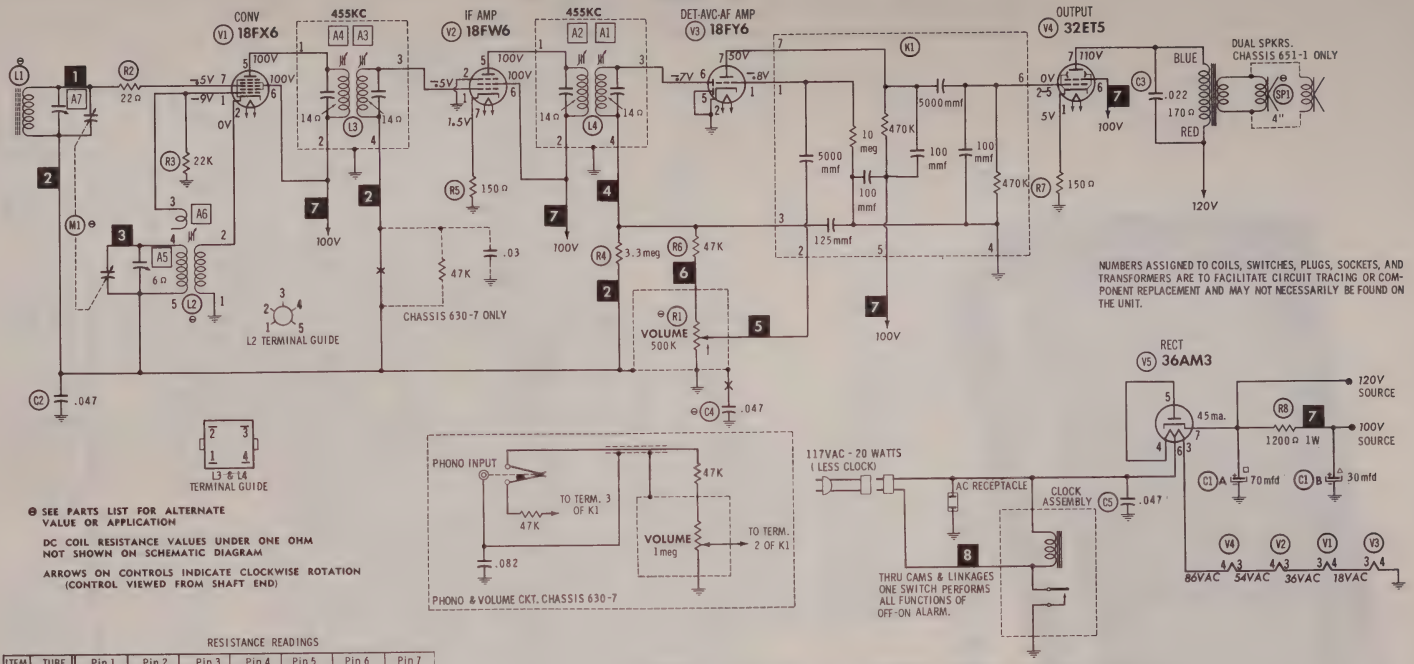
SET 543 FOLDER 17



⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	18FX6	22K	.1Ω	40Ω	20Ω	†1200Ω	†1200Ω	3.8meg
V2	18FW6	3.8meg	0Ω	40Ω	60Ω	†1200Ω	†1200Ω	150Ω
V3	18FY6	10meg	0Ω	20Ω	0Ω	0Ω	550K	†470K
V4	32ET5	150Ω	NC	60Ω	105Ω	470K	†1200Ω	†170Ω
V5	36AM3	NC	¶	105Ω	143Ω	143Ω	140Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5. NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE

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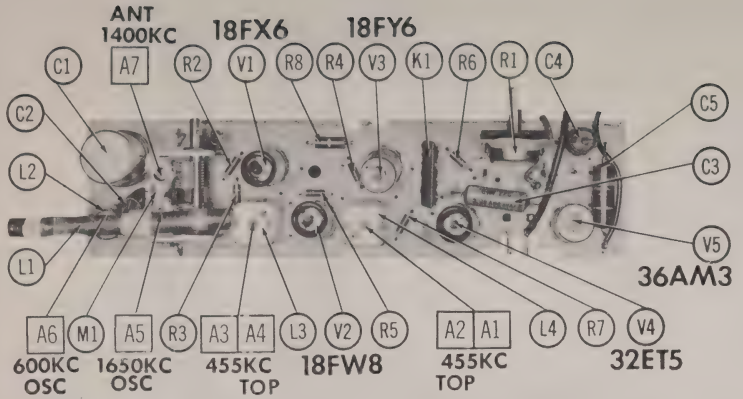
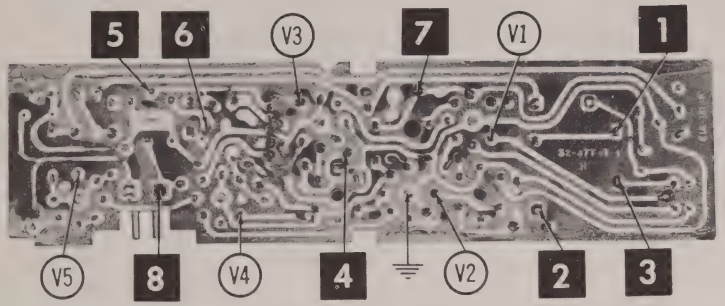
SYLVANIA, GOLDEN SHIELD CHASSIS
630-5, -6, -7, -8, -9, 651-1, -2, -3, -4





A Howard W. Sams CIRCUITRACE* Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	18FX6	V4	Output	32ET5
V2	IF Amplifier	18FW6	V5	Rectifier	36AM3
V3	Det. -AVC-AF Amp.	18FY6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Golden Shield PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■70	150	161-2016	PWH2-17-50	XB0181 †	PFP214.3	TMD-2125 ‡	PCL-2441	
B	▲30	150							

† Use printed circuit adapters 55277 & 55278.
‡ Use printed circuit adapter kit TMA.

PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.047 400V	Note 1	P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C3	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C4	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C5	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Golden Shield PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	500K	½	157-0057				P2-55A	Volume (Note 1)

Note 1. Chassis 630-5 uses Part #157-0041 (With Switch)
Chassis 630-6 uses Part #157-0052
Chassis 630-7 uses Part #157-0054 (Imeg With Switch)
Chassis 630-8, 651-3, use Part #157-0053
Chassis 651-1 uses Part #157-0056 (With Switch)
Chassis 630-9, 651-2 uses Part #157-0059 (With Switch)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	22Ω				R6	47K			
R3	22K				R7	150Ω			
R4	3.3meg				R8	1200Ω 1W			
R5	150Ω								

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		Golden Shield PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick	(See Chart)	BC-419	705-A		T532	① Part #113-0045 used in Chassis 630 Series.
L2	Osc.	113-0046 ①					
L3	Input IF	121-0108	BC-356	13-PC1	RTC-8641	T614	
L4	Output IF	121-0108	BC-357	13-PC2	RTC-8642	T615	

ANTENNA CHART

Models using Chassis 651 Series use Loopstick Part #581-0015

MODEL NO.	LOOP PART NO.	MODEL NO.	LOOP PART NO.	MODEL NO.	LOOP PART NO.
5C10B	582-0046	5C17B	582-0061	5T12T	582-0054
5C10P	582-0047	5C17T	582-0062	5T12W	582-0052
5C11B	582-0044	5C18	582-0059	5T16B	582-0064
5C11T	582-0045	5T10B	582-0048	5T16T	582-0063
5C12R	582-0050	5T10B	582-0041	5T18	582-0060
5C12T	582-0051	5T11B	582-0043	6010	582-0055
5C12W	582-0049	5T11T	582-0042	6011	582-0055
5C16B	582-0061	5T12R	582-0053	6018	582-0055
5C16T	582-0062				

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Golden Shield PART No.	REPLACEMENT DATA
K1	Audio Coupling	(3) 100mmf, 125mmf, (2) 5000mmf, (2) 470K, 10meg	190-0028	Centralab PC-390

SYLVANIA, GOLDEN SHIELD CHASSIS
630-5, -6, -7, -8, -9, 651-1, -2, -3, -4

FOLDER 17

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Golden Shield PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2200Ω	3-4Ω	143-0045	A-3025	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Golden Shield PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	539-0429 *	4A07	* Used in Models 1100, 1111, 1160, 1212, 1219, 1286, 1300, 1301, 1306, 1309, 1322, 1400, 1512, 1519, 5C10B, P, 5C11B, T, 5C12R, T, W, 5C16B, T, 5C17B, T, 5C18, 5T10B, P, 5T11B, T, 5T16B, T, 6010, 6011, 6018
	4"x 6"	PM		539-4606 ‡		‡ Used in Models 5T12R, T, W, 5T18
	4"	PM		539-0437 ♦		♦ Used in Models 1600, 1701, 1704, 1708, 1709
	4"	PM		539-0438 ♦		

MISCELLANEOUS

ITEM No.	PART NAME	Golden Shield PART No.	NOTES
M1	Tuning Cap.	170-0039	2 Gang, Chassis 651-1, 651-4
	Tuning Cap.	170-0038	2 Gang, Chassis 651-2, 651-3
	Tuning Cap.	170-0037	2 Gang, Chassis 630-7
	Tuning Cap.	170-0029	2 Gang, Chassis 630-6
	Tuning Cap.	170-0019	2 Gang, Chassis 630-5, 630-8
	Tuning Cap.	170-0049	2 Gang, Chassis 630-9

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

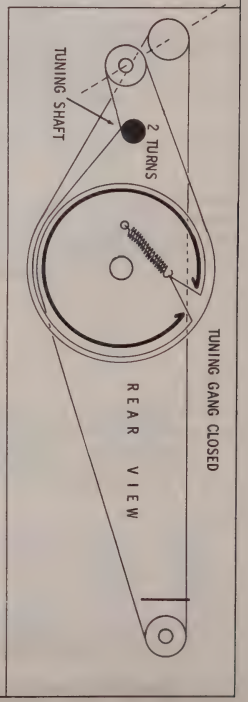
CABINETS & CABINET PARTS

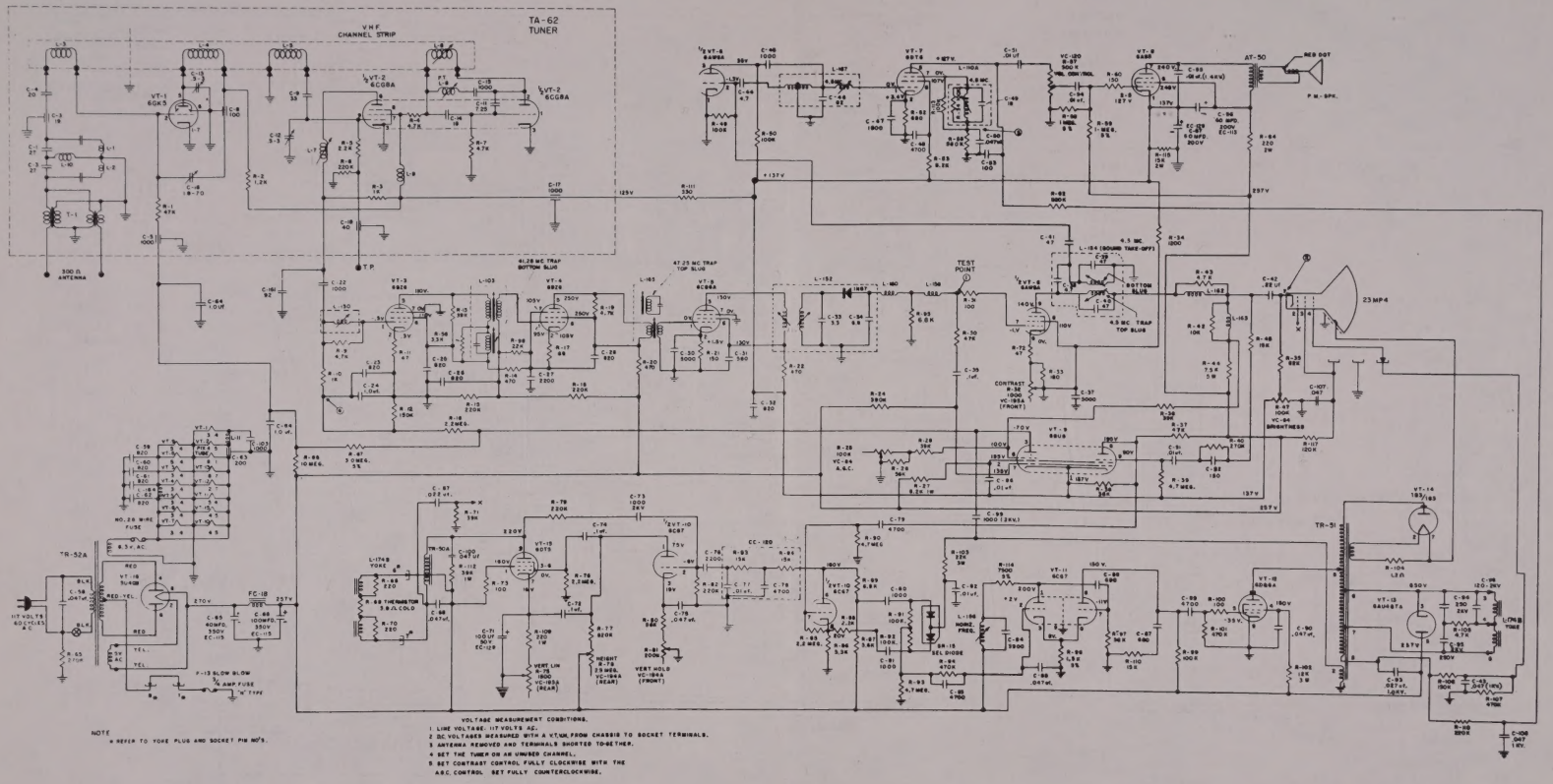
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob, Tuning	741-0080	Models 1100, 1111, 1160, 1212, 1219, 1286, 1400, 1512, 1519, 6010, 6011, 6018
" "	740-0329	Models 1300, 1301, 1306, 1309, 1322, 1600, 1701, 1704, 1708, 1709
" "	741-0068	Model 5C10B
" "	741-0075	Model 5C10P
" "	741-0057	Models 5C11B, 5T11B
" "	741-0058	Models 5C11T, 5T11T
" "	741-0072	Model 5C12R
" "	741-0073	Model 5C12T
" "	741-0060	Model 5C12W
" "	741-0043	Model 5T10B
" "	741-0055	Model 5T10P
" "	741-0074	Models 5T12R, 5T12T, 5T12W, 5T18
" "	742-0052	Models 5C16B, 5C17B, 5T16B
" "	742-0048	Models 5C16T, 5C17T, 5T16T
" "	741-0102	Model 5C18
Knob, Volume	740-0326	Models 1100, 1111, 1160, 1212, 1219, 1286, 1400, 1512, 1519, 6010, 6011, 6018
" "	741-0081	Models 1300, 1301, 1306, 1309, 1322, 1600, 1701, 1704, 1708, 1709
" "	740-0300	Model 5C10B
" "	740-0299	Model 5C10P
" "	740-0296	Model 5C11B
" "	740-0297	Model 5C11T
" "	740-0302	Models 5C12R, 5C12T, 5C12W
" "	742-0023	Model 5T10B
" "	742-0038	Model 5T10P
" "	742-0040	Model 5T11B
" "	742-0041	Model 5T11T
" "	740-0303	Models 5T12R, 5T12T, 5T12W, 5T18
" "	740-0410	Models 5C16B, 5C17T
" "	740-0401	Models 5C16T, 5C17B

CABINETS & CABINET PARTS (cont)

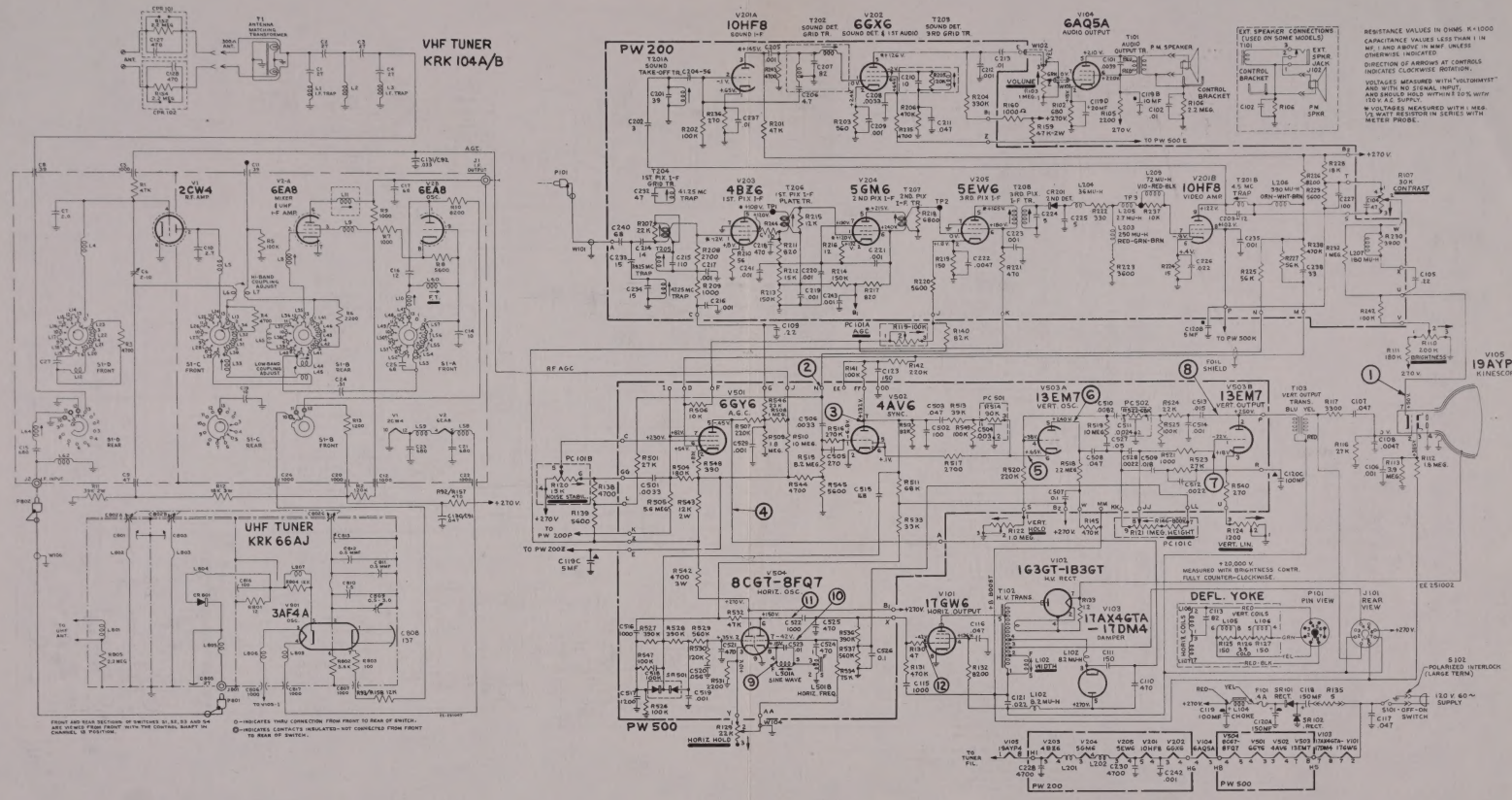
NAME	PART NO.	DESCRIPTION
Knob, Volume	742-0050	Model 5C18
" "	742-0051	Model 5T16B
" "	742-0049	Model 5T16T
Knob, Dimmer	740-0226	Models 5C12R, 5C12T, 5C12W, 5C18
Knob, Sleep-On-Off	740-0328	Models 1212, 1219, 1286
" " " "	740-0255	Models 5C10B, 5C10P, 5C11B, 5C11T, 5C16B, 5C16T
" " " "	740-0205	Models 5C12R, 5C12T, 5C12W, 5C18
" " " "	740-0419	Models 5C17B, 5C17T
Knob, On-Off	740-0321	Models 1100, 1111, 1160
" " "	740-0170	Models 5C12R, 5C12T, 5C12W, 5C18
Pushbutton, Snooze	751-0009	Models 1300, 1301, 1306, 1309, 1322
" "	740-0409	Model 5C17B
" "	740-0408	Model 5C17T
" "	740-0407	Model 5C18
Pointer, Dial	792-0030	Models 1300, 1301, 1306, 1309, 1322
"	792-0029	Models 1600, 1701, 1704, 1708, 1709
Crystal, Clock	717-0011	Models 1100, 1111, 1160
" "	717-0012	Models 1212, 1219, 1286
" "	17-0005	Models 5C10B, 5C10P, 5C11B, 5C11T, 5C16B, 5C16T, 5C17B, 5C17T
" "	717-0010	Models 5C12R, 5C12T, 5C12W, 5C18
Dial	721-0033	Models 5T12R, 5T12T, 5T12W, 5T18
Cabinet Back	822-0083	Model 1100
" "	822-0111	Model 1111
" "	822-0112	Model 1160
" "	822-0086	Model 1212
" "	822-0084	Model 1219
" "	822-0085	Model 1286
" "	822-0075	Model 1300
" "	822-0079	Model 1301
" "	822-0017	Model 1306
" "	822-0077	Model 1309
" "	822-0018	Model 1322
" "	822-0080	Model 1400
" "	822-0082	Model 1512
" "	822-0081	Model 1519
" "	822-0068	Model 1600
" "	822-0113	Model 1701
" "	822-0114	Model 1704
" "	822-0070	Model 1708
" "	822-0072	Model 1709
Cabinet Front	822-0087	Models 1100, 1160, 1286, 1400
" "	822-0088	Models 1111, 1212, 1219, 1512, 1519
" "	822-0074	Model 1300
" "	822-0078	Model 1301
" "	822-0015	Model 1306
" "	822-0076	Model 1309
" "	822-0016	Model 1322
" "	822-0069	Models 1600, 1701, 1704, 1708, 1709
Cabinet	822-0123	Model 6010
"	822-0124	Model 6011
"	822-0125	Model 6018
"	813-0128	Model 5C10B
"	813-0135	Model 5C10P
"	813-0134	Model 5C11B
"	813-0133	Model 5C11T
"	813-0137	Model 5C12R
"	813-0138	Model 5C12T
"	813-0136	Model 5C12W
"	813-0147	Model 5C16B
"	813-0146	Model 5C16T
"	813-0154	Model 5C17B
"	813-0153	Model 5C17T
"	813-0155	Model 5C18
"	813-0119	Model 5T10B
"	813-0129	Model 5T10P
"	813-0131	Model 5T11B
"	813-0132	Model 5T11T
"	813-0140	Model 5T12R
"	813-0141	Model 5T12T
"	813-0139	Model 5T12W
"	813-0149	Model 5T16B
"	813-0148	Model 5T16T
"	813-0156	Model 5T18





TRAV-LER MODELS 23K6180F, M, W (CH. 1062-151)

Schematic Diagram Courtesy of Trav-ler Radio Corporation



RCA VICTOR MODELS 192A072MU, MV, 192A075MU, MV,
192A078MU, MV, 192A079MU, MV (CH. KCS137A, B)

Schematic Diagram Courtesy of Radio Corporation of America

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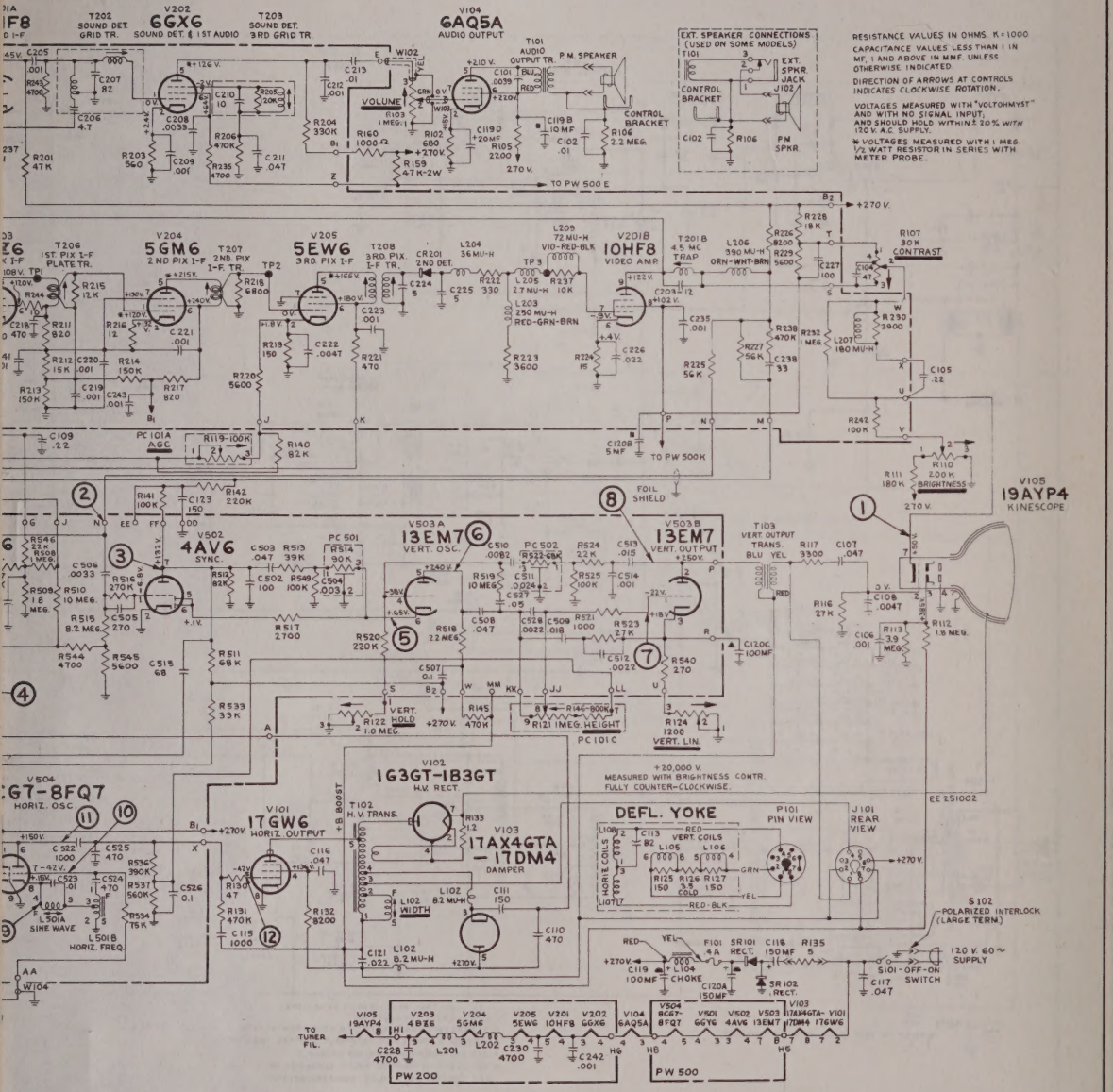

Schematic Diagram Courtesy of Radio Corporation of America